MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

VOL. 155, No. 10 JUNE 1942 WHOLE No. 2713

Menace to Workers in War Industries

A concerted campaign was launched recently to reduce the rapidly rising toll of industrial accidents which last year resulted in deaths of men in the Selective Service age group equal in number to two full Army divisions. Harry Guilbert, director of the National Committee for Conservation of Manpower in War Industries, a voluntary agency set up by the Labor Department, said that the campaign would seek to spread to smaller plants the safety methods already adopted by some large concerns.

The extent of the need for better safety measures was indicated by the report that fatalities in Illinois factories alone for the first two months of this year were twenty percent ahead of 1941. In England the last annual report of Britain's chief inspector of factories showed a twenty-four percent increase in industrial fatalities. The chief increases were among workers on machinery and in industries engaged in war work—thirty-three percent for engineering, forty-seven percent for machinery manufacture, twenty-one percent in chemical plants, fifty-six percent on milling machines and forty-eight percent on power presses.

Even in normal times, industrial accidents in the United States are responsible for more than sixteen thousand deaths and about a million and a half disabling injuries annually. In 1940, when the defense program was getting under way, industrial accidents increased ten percent. Last year the increase was considerably greater. Mr. Guilbert estimated that the number of workers in war industries would be raised from five million to nearly fifteen billion by the end of the year, and added that this would increase the danger of accidents sharply.

Besides the mere increase in production and, therefore, in the number of workers, he pointed out that war plants are calling on thousands of relatively inexperienced men to run plants and machines, and these must be trained in safety methods as well as in mere production if the accident rate is to be held down.

A new kind of gas gangrene threatens workers in war industries unless care is taken to guard open cuts and wounds from magnesium splinters and dust, according to a report by Dr. Carey P. McCord, of the medical department of the Chrysler Corporation in Detroit. Metallic magnesium and some of its alloys have been found to produce a unique gaseous condition when they get into wounds. The condition is similar to gas gangrene, but it is caused by the magnesium instead of by germs.

This kind of chemical gas gangrene has been prevalent in German industries, with as many as five thousand cases in 1939. Studies by McCord, Stuart, F. Meek and Gordon C. Harrold, all of the Chrysler Corporation's medical department, showed the danger of not cleaning out all metal particles or dust from a wound in which magnesium particles might be involved. Rat wounds in which small particles of magnesium had been introduced, unlike those contaminated with most metals, glass and wood, promptly lead to hydrogen gas formation in the tissues. The quantity of gas was extensive and if neglected probably would produce a condition akin to a chemical gas gangrene.

In the presence of magnesium particles it was discovered that hydrogen was evolved from the fluids of the tissues themselves and if the metal was not immediately extracted, would form a gaseous tumor. Thus injuries resulting from not cleaning all magnesium particles from wounds seems much more serious than ordinary industrial injuries. The danger of this effect of magnesium, according to McCord, calls for special preventive procedure against accidental injuries where magnesium particles might be involved, and for the availability of immediate medical care. The complete removal of all metallic magnesium apparently is vital.

Children in the Warring Countries

The food situation in the warring countries affects the young and the old of the civilian population more than any other section. The old, from many points of view, are of no particular consequence. Many of them have done their work and are at the end of their tether and although, as a rule, they deserve a rest in their declining years, from the practical national outlook they will not be missed greatly.

The case of the children is different altogether, and obviously it is of supreme national importance that they be kept in the best state of health possible. In order that this object may be achieved, they must be fed properly which means as scientifically and whole-

somely as conditions allow. Nourishment, especially of young children, has been placed on a scientific basis during recent years. Vitamin C is necessary for the function of the intercellular material of tissue derived from mesenchyme. In its absence collagen is not found between the cells of connective tissue, and osteoid tissue in bone and dentine in teeth are formed imperfectly; there is probably also deficiency of intercellular material in the endothelial of capillaries.

In short, if young children do not have suitable food, that is, food containing a sufficiency of vitamin C, they are apt to develop scurvy or a scorbutic tendency if this lack continues for any length of time. Naturally, the way to prevent this or to combat it when incurred is to give food containing vitamin C, the best antiscorbutic remedy. Fresh orange juice is admirable.

But in the countries at war, in Britain, for instance, it is impossible to obtain oranges or lemons, except in the most meager quantities. In a *Wartime Nutrition Bulletin,* issued by the Children's Nutrition Council, the problem of infantile scurvy is discussed. To prevent this scurvy, children need thirty milligrams of vitamin C a day. The cessation of imports of citrus fruits richest in this vitamin makes the problem of finding substitutes of vital importance and as one solution the council recommends that the entire crop of black currants in Britain, the richest in vitamin C of home grown fruits, should be reserved for the production of a purée for young children. As the currant crop will not be gathered for some time, attention should be paid to the use of synthetic vitamin C. Some infants do not tolerate the natural vitamin C and in these cases the crystalline vitamin may be given.

Soldiers' Feet

Every military medical manual tells us that the soldier is of little value if he cannot march. The condition of soldiers' feet is most important to the Army. Battles may be won or lost because of the marching ability of the troops.

This is true also in our times of mechanized warfare. Epidermophytosis is probably the commonest foot affection of the soldier, aside from simple friction blisters. The conditions of communal living, to which soldiers are subject, furnish a favorable opportunity for the spread of infection, which is not easy to prevent.

Epidermophytosis is no triflng infection. P. R. Beckjord, in *Military Surgeon,* points out that he has seen an entire battalion rendered temporarily unable to march because of infection with the fungus. The prevention of reinfection is a fundamental part of the treatment. Beckjord outlines a method of prophylaxis for soldiers' quarters, emphasizing the necessity of carefully enforcing observance of details.

All floors of the soldiers' quarters should be mopped daily with a strong germicidal soap, thoroughly rinsed, and dried. Deposits in cracks, grooves and corners should be periodically scraped out. The duckboards used on the shower room floor should be supplied in two sets, so that one set can be put out to dry in the sun while the other is in use. Footbaths may contain one ounce of calcium hypochlorite to four gallons of water, or ten percent sodium thiosulphate solution. The foot bath should be placed where it must be stepped in on entering or leaving the shower. Wool socks must be changed daily, washed and dried thoroughly, and exposed to the sun. Wet footgear is a potent factor in producing a full-blown infection. Fungicidal or fungistatic powders, sprinkled on the feet and in the shoes, may aid in retarding growth of the epidermophyton.

The vesicular type of epidermophytosis, if mild, may be treated by painting with a one to ten percent solution of gentian violet in alcohol once or twice daily. More severe reactions may require hospitalization. The intertriginous type of fungous infection should be treated with drying agents, and by judicious removal of the water-logged layers of the skin. Keratolytic ointments may be of value in the hyperkeratotic form.

War Nephritis

The term "trench" was applied to epidemic nephritis in the last war because most of the fighting was trench warfare. As A. H. Douthwaite pointed out in an article contributed to *Modern Treatment in General Practice Yearbook,* 1941, the disease often affected the soldiers who had never been in the trenches. Moreover, it was known in the Franco-Prussian and North American wars where the stalemate of widespread entrenchment was unknown. According to Douthwaite, it is an epidemic form of acute glomerular nephritis, occurring in soldiers on active service and is worthy of a distinctive name because during war time it has not only been epidemic but also has had a striking partiality for soldiers. Civilians with whom they were in close contact did not suffer from the disease. Its features and the conditions in which it arises suggest that environmental conditions must be of paramount importance in nurturing this affection. That an infective agent is the proximate cause is indicated, not only by its epidemic nature, but also by its mode of spread. The English army in France was first attacked early in 1915, but the French not until midsummer and then at first only in units adjoining the English lines.

It seems that war nephritis differs in some respects from what may be termed civilian nephritis or, perhaps, a close environment causes the epidemic form to develop; that is, if individuals suffering from nephritis are grouped together in a somewhat confined space the contagion spreads. Treatment is essentially the same as for acute nephritis in civilians.

Papers and Addresses

AN EVALUATION OF VITAMIN B THERAPY IN NEUROLOGICAL AND PSYCHIATRIC CONDITIONS*

MATTHEW T. MOORE
Philadelphia, Pa.

(*Continued from page 310*)

Vitamin B_2—Riboflavin

Deficiency of vitamin B_2 manifests itself mainly in the form of cheilosis, a seborrheic dermatosis involving the nasolabial folds, ala nasi and ears, glossitis, vascularizing keratitis, disturbed growth, etc. In the field of neurology and psychiatry, clinical application has as yet failed to indicate any specific effects of this vitamin. It probably is important, however, as has been demonstrated by Zimmerman (107) and by Phillips and Engel (108) in the metabolism of nervous tissue. Spies and his co-workers (21) have indicated the adjuvant action of riboflavin with nicotinic acid in the treatment of pellagra.

Vitamin B_6—Pyridoxine

In 1939 Spies, Bean and Ashe (98b) reported dramatic improvement, following the intravenous administration of fifty mg. of pyridoxine, in a small group of patients suffering from a vaguely defined symptom complex consisting of "extreme nervousness, irritability, abdominal pain, weakness and difficulty in walking." Following this report pyridoxine has been used in a variety of neurological conditions with conflicting opinions regarding its value. As yet no specificity of action has been determined. There is experimental evidence that it probably is concerned in the metabolism of nervous tissue (109).

Pseudohyperthropic muscular dystrophy, during the past ten years, has been subjected to a barrage of therapies, most recent of which have been vitamin B_6 (pyridoxine), and vitamin E. Antopol and Schotland (110) reported six cases treated with ten to five hundred mg. of pyridoxine. Five patients showed improvement and the other, the only female in the series, improved for a week, following which she steadily declined despite active treatment with vitamin B_6. Ferrebee, Klingman and Frantz (111) studied a series of twenty-six patients, comprised of thirteen cases of pseudohypertrophic muscular dystrophy, seven cases of progressive muscular dystrophy, and six cases of amyotrophic lateral sclerosis, treated with pyridoxine and vitamin E. No improvement was observed in the twenty cases of muscular dystrophy and the active progression of symptoms in the cases of amyotrophic lateral sclerosis was in no way stayed. These negative results have been reported by Doyle and Merritt (112), McBryde and Baker (113), and Wortis (62).

Parkinson's syndrome, or paralysis agitans, has been treated with pyridoxine by several investigators, and here again the reported results suffer from a lack of unanimity. Spies, Hightower and Hubbard (114) treated eleven patients having paralysis agitans with vitamin B_6. Three cases of the postencephalitic variety and two "arteriosclerotic" showed definite improvement; The six remaining "arteriosclerotic" Parkinsonians were not benefited. Jolliffe (115) reported favorable results in six patients out of a series of 15 cases of paralysis agitans, treated with fifty to one hundred mg. pyridoxine intravenously daily or on alternate days. In a later report of a larger series of ambulant cases of Parkinson's disease, Jolliffe (62) again observed objective as well as subjective improvement, notably among the postencephalitic types. Wilder (116) cites the lessening of tremor and increased strength noted in eight out of twenty cases of Parkinson's disease treated with vitamin B_6. Satisfying results have also been reported by Baker (117) and Rudesill and Weigand (118).

Indifferent results, in a group of fifteen cases of Parkinson's disease, treated with large doses of pyridoxine, have been reported by Zeligs (119). Loughlin, Myersburg, and Wortis (62) observed no objective improvement in twelve cases of paralysis agitans, when treated with large doses of thiamine hydrochloride, nicotinic acid, riboflavin and pyridoxine. It is evident that whatever influence pyridoxine may have in cases of paralysis agitans, its exact action is not yet understood. Moreover, improvement cannot be anticipated in those cases of long standing or where evidence of marked involvement of the basal ganglia is apparent.

A case of peripheral neuropathy, following arsenic trioxide poisoning, responded favorably with the intravenous use of pyridoxine, as reported by Vilter, Aring and Spies (78). This has been referred to previously in the discussion of vitamin B_1 in the treatment of peripheral neuropathies.

Three patients suffering from myasthenia gravis were treated with pyridoxine by Spies, Hightower and Hubbard (114), who reported improvement in strength within twenty-four to forty-eight hours. The pharmacodynamic action of vitamin B_6 in myasthenia gravis has yet to be explained, whereas the action of prostigmin methylsulphate, in this disease, has had ample classification in the literature.

Nicotinic Acid—p-p Factor

Nicotinic acid made its debut into the field of neuropsychiatry by its spectacular effect on the acute psychoses encounted in pellagra. This was demonstrated by Spies, Aring, Gelperin and Bean in 1938

*Prepared for the Symposium on Nutrition, ninety-first annual session of the Pennsylvania Medical Society, October 6-9, 1941.

(97), in a carefully controlled series of seventy pellagrins all of whom had an accompanying acute psychosis which yielded rapidly to the administration of .500 to 1000 mg. nicotinic acid daily in divided doses. Spies and his co-workers (120 a-b) earlier in 1938 had referred to the beneficial effect of nicotinic acid on the various mental symptoms found in pellagrous patients. Numerous reports have substantiated, in full measure, the excellent results obtained in the acute and subacute psychoses of pellagra following the use of nicotinic acid. The chronic type of psychosis, in pellagrins of long standing, does not fare so well with nicotinic acid. In such cases unalterable neuronopathy evidently has occurred due in part to the lack of nicotinic acid and probably to an equal or greater extent due to deprivation of other components of the B complex, other vitamins and many of the "essential factors" (93) necessary to normal nervous tissue metabolism.

Subclinical pellagra or subclinical deficiency states may be manifested by many symptoms and complaints forming the neurasthenia-like syndrome described earlier in this paper or by mental hebetude and varying degrees of stupor. Cleckley, Sydenstricker and Geeslin (121) treated atypical psychotic states with nicotinic acid and reported favorable results. The use of large doses of nicotinic acid (500 to 1000 mg. per 24 hours, given orally in divided doses, over a period of weeks), in pre-pellagrous patients, showing mental symptoms ranging from undifferentiated psychoses to stupor, produced prompt relief in the series reported by Sydenstricker, Schmidt, Fulton, New and Geeslin (122), and by Aring and Spies (49).

The importance of distinguishing these subclinical deficiency states from other organic cerebral lesions whose symptomatology may be identical has been indicated by me in a previous work (123), and as a corollary the use of nicotinic acid has been advocated as a therapeutic diagnostic test.

In 1940, Jolliffe, Bowman, Rosenblum and Fein (124), differentiated a specific "encephalopathic syndrome" clinically manifested by "clouding of consciousness, cog-wheel rigidities of the extremities and uncontrollable grasping and sucking reflexes" from similar symptom-complexes occurring in other conditions, such as acute alcoholic hallucinosis, febrile diseases, cerebral arteriosclerosis and brain tumors. This syndrome, they believe, is produced by a deficiency of nicotinic acid and "may occur as the only clinical manifestation of a deficiency disease or it may occur in association with pellagra, polyneuritis due to vitamin B_1 deficiency, the oculomotor disturbances of a 'cerebral neuritis' or scurvy." Jolliffe and his co-workers (124) established this as a specific "nicotinic acid deficiency encephalopathy" on the basis of response to treatment with nicotinic acid as compared with hydration, hydration plus thiamine hydrochloride, and hydration plus the whole vitamin B complex. The treatment which they advocated for this syndrome, consisted of the administration of 1000 mg. nicotinic acid in physiological saline solution given in ten hourly doses by mouth, and 100 mg. sodium nicotinate in five percent glucose physiological solution intravenously plus 100 mg. sodium nicotinate solution intramuscularly daily.

The use of nicotinic acid in delirium tremens, multiple sclerosis, nerve deafness, and Ménière's disease has been alluded to previously. Panothenic acid (filtrate factor) and p-aminobenzoic acid (antigray hair factor) have had no clinical application thus far in the realm of neurological or psychiatric problems.

Comment

It becomes more and more evident with increasing clinical experience in vitamin therapy that an isolated deficiency of one factor of the B complex does not exist in man. The general consensus of opinion of the numerous investigators in this field is to the effect that multiple deficiencies are invariably present even in those apparently "specific" deficiency syndromes. In those neurological or psychiatric conditions presenting some major type of nervous system involvement, and where nutritional deficiency is evident, treatment with the indicated "specific" crystalline member of the B complex should be augmented with the entire B complex, as found in desiccated brewer's yeast, and with a properly balanced high vitamin diet.

Apart from experimental and biochemical considerations clinical application of vitamin B therapy clearly establishes its important place in the treatment of neurological and psychiatric conditions. As more carefully controlled methods of study are developed there will emerge more specific criteria for the administration of one or more members of the vitamin B complex or perhaps other vitamins and "essential factors." Until such time it appears that vitamin B_1 has its main field of usefulness in peripheral neuropathies and central neuronopathies wherein definite clinical evidence of a nutritional deficiency exists. The effect of nicotinic acid upon the acute psychoses occurring in pellagra and upon the "encephalopathic syndrome" of Jolliffe establishes its role in the metabolism of the neurone, although even here there is a combined need for other members of the B complex. The effectiveness of the other members of the vitamin B complex in the various conditions referred to in this paper must still be determined by increased experience.

A more adequate evaluation of the effect of vitamin B therapy in neuropsychiatric conditions can only be achieved by improved methods of clinical appraisal of symptoms and response to isolated components of the B complex, by early diagnosis and treatment so as to circumvent the barriers imposed by irreversible pathological changes, and by increased knowledge concerning the enzymic activity of vitamin B and its relationship to inorganic substances and to other vitamins.

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THE SIMULTANEOUS USE OF PROSTIGMIN METHYLSULFATE AS A TREATMENT FOR DELAYED MENSTRUATION AND AS A DIAGNOSTIC TEST FOR PREGNANCY

EDWARD SETTEL
Brooklyn, N. Y.

In May 1940, there appeared in the *Journal of the American Medical Association* an interesting paper by Soskin, Wachtel, and Hechter (1) which reported their highly successful use of prostigmin methylsulfate[1] in cases of menstrual delay. It was reported further in the same paper that patients complaining of menstrual delay and treated with this drug would soon menstruate *unless they were pregnant;* that if they did not menstruate, pregnancy could be diagnosed with the same degree of accuracy as is possible with the Friedman test. Thus was set forth still another test for pregnancy.

There were certain limitations, however, and not all patients with menstrual delay were to be considered eligible for prostigmin methylsulfate therapy, particularly if the diagnosis of pregnancy were to depend upon whether or not menstruation resulted. It is this latter circumstance which has added much fuel to the fire of widespread interest and controversy which announcement of this new pregnancy test has provoked and it is the purpose of this communication, therefore, to discuss the claims of the original investigators, and to report results obtained in seventeen cases in which the test had been personally applied.

It was the work of Reynolds (2) which led Soskin et al. to seek a pharmacological rather than an endocrine treatment for certain types of menstrual delay. This investigator demonstrated an increase in the acetylcholine content of the uteri of ovariectomized rabbits after the administration of estrin and contended that the uterine hyperemia thus produced by estrin played an important rôle in the estrus phenomenon. Soskin et al. were convinced that if uterine hyperemia were responsible for a large proportion of estrous phenomena in animals, it was probably even more largely concerned in periodic menstrual bleeding in human females. Since increase in acetylcholine content of uterine tissue, induced by estrin, was postulated as the mechanism of this hyperemia, and since acetylcholine liberation is also a resultant of parasympathetic stimulation, it seemed that the hyperemia might also be under the influence of that portion of the autonomic nervous system. Failure of some women to menstruate during time of mental, emotional, or physical strain—in other words, during times of great sympathetic stimulation—lends credence to this latter contention. Lack of uterine vascular responsiveness, therefore, rather than any abnormality in estrogen production and secretion, might be the causative factor for delayed menstruation in some cases and in consequence it appeared logical to bring about uterine hyperemia pharmacologically. Obviously, acetylcholine would be the drug of choice for this purpose, but since routine use of this drug was considered dangerous, it was decided to potentiate the naturally occurring acetylcholine in uterine tissue by inhibiting cholinesterase, the enzyme which destroys it. This inhibitory action can be gained through administration of prostigmin methylsulfate, a synthetic physostigmine-like substance.

The fact was appreciated, however, that in some cases of delayed menstruation in which prostigmin was to be used, the absence of menstruation might actually be a physiological *cessation* of this function owing to pregnancy, and it was necessary, therefore, to be assured that the drug would have no abortifacient action upon the gravid uterus. Such assurance was gained through administration of postigmin in varying dosages to freshly impregnated rats on the first three successive days of pregnancy. Even when massive doses of prostigmin were injected, pregnancy was not terminated in a single instance, the animals ultimately bearing healthy litters after perfectly normal gestation periods.

Soskin and his co-workers then administered one to two cc. of prostigmin methylsulfate parenterally on each of three successive mornings to twenty-three patients presenting physical signs and symptoms of early pregnancy together with a positive modified Aschheim-Zondek test (Friedman). In no instance did uterine bleeding occur, nor was the pregnancy disturbed. Contrasted with this was a series of twenty-five patients

[1]Dimethyl-carbamic ester of m-oxyphenyl-trimethyl ammonium bromide. Manufactured by Hoffmann-La Roche, Nutley, N. J.

Use of Prostigmin as Test for Pregnancy and in Delayed Menstruation
Initiation of Menses by Prostigmin in Cases of Menstrual Delay

CASE	AGE	GRAVIDITY	MENSTRUAL DELAY	ASCHHEIM-ZONDEK TEST	DOSAGE OF PROSTIGMIN	RESULT MENSES IN
1. B. B.	22	0	4 days	Not done	1x2 cc.	+12 hrs.
2. J. B.	23	0	7 "	" "	3x2 cc.	+70 "
3. G. B.	23	0	10 "	" "	3x2 cc.	+70 "
4. N. H.	20	1	8 "	" "	3x2 cc.	+36 "
5. A. S.	18	0	5 "	" "	1x2 cc.	+10 "
6. S. F.	26	0	6 "	" "	1x2 cc.	+24 "
7. M. H.	42	3	4 "	" "	1x2 cc.	+18 "
8. G. N.	33	1	8 "	" "	2x2 cc.	+48 "
9. N. H.	21	1	6 "	" "	3x2 cc.	+70 "
			Pregnancy			
10. A. B.	35	2	32 days	positive	3x2 cc.	0
11. H. R.	33	0	31 days	"	3x2 cc.	0
12. L. N.	38	4	2 months	"	3x2 cc.	0
13. G. M.	41	1	2 months	"	3x2 cc.	0
14. M. B.	23	0	7 weeks	"	3x2 cc.	0
15. C. M.	20	0	7 weeks	Not done (now in fifth month of pregnancy under my care)	3x2 cc.	0
16. N. K.	24	1	5 weeks	Not done (now in third month of pregnancy under my observation)	3x2 cc.	0
			Nonconfirmatory			
17. M. M.	28	1	8 days	negative	3x2 cc.	0

in whom pregnancy was ruled out by history and physical examination and by a negative Friedman test when necessary. Again prostigmin was administered according to the same general dosage schedule, with the exception that some of the patients received only one or two injections. Menstrual flow invariably followed, the onset occurring on an average of twenty-eight hours after the last (sometimes after only one) injection. The nature of their observations naturally led Soskin, Wachtel, and Hechter to the conclusion that, "The constancy of the results in menstrual delay and the lack of effects on pregnancy make it possible to use prostigmin as a combined treatment for menstrual delay and a therapeutic test for pregnancy."

Following the same general procedure, the prostigmin treatment and test (for in reality it *is* both treatment *and* test) was applied in the seventeen cases of menstrual delay which are herein reported. The essential details are given in the chart. It will be seen at a glance that the results obtained are in accordance with those reported by Soskin and his co-workers.

In commenting on these cases, and upon the subject in general, it will be well to consider Case 17 first. In the series of seventeen cases of menstrual delay, this case represents the one failure of prostigmin to induce menstruation in the absence of pregnancy. It will be remembered, however, that certain limitations were ascribed to the prostigmin test for pregnancy and that not all patients with menstrual delay were to be considered eligible for its application. The report of Soskin et al. clearly states that their procedure, "applies only to delayed menstruation in women who have had a normal menstrual history up to the last period. It does not apply either to early or to prolonged amenorrhea due to endocrine dysfunction or to local organic changes." The authors gave prostigmin to a considerable number of such cases without the slightest result.

In Case 17, although the patient was not pregnant as established by physical examination and a negative Aschheim-Zondek test, she did not menstruate until twenty-two days following prostigmin administration. However, her previous menstrual history was irregular and she stated that a menstrual delay of one to five weeks was a fairly frequent occurrence. Obviously, this case does not represent a true prostigmin failure; it is included for the sake of completeness and to demonstrate a type of menstrual delay in which the test is not applicable.

Results in the remaining sixteen cases are in complete accord with those obtained by Soskin and his coworkers. With the exception of A. S. (Case 5) who had an obesity of probable endocrine origin but who responded correctly to the prostigmin test notwithstanding, none of these patients presented evidence of endocrine imbalance or local pelvic pathology. In eliminating endocrinopathies and local organic pathology as etiological agents in the amenorrhea of which potential prostigmin test candidates complain, it is reasonable to assume that neither of these conditions would result in an abrupt cessation of menses without earlier alterations in the amount and character of the flow. A previously normal menstrual history up to the time of the last period, one of the stipulations of the test, further diverts suspicion from endocrinopathy or local organic change. Bimanual pelvic examination is, of course, carried out where indicated.

In my opinion the great value of administering prostigmin to patients complaining of menstrual delay lies in the fact that the procedure is at once therapeutic and diagnostic. The "overdue" patient in whom previously described limitations can be ruled out should immediately be considered a candidate for prostigmin administration—for at the same time she is receiving rational treatment for her menstrual delay, the presence or absence of pregnancy is being accurately determined. The purpose of the injections should be very carefully explained to her so that she does not interpret the procedure as an attempt to interrupt pregnancy.

Summary

1. Results obtained in seventeen cases of menstrual delay treated with prostigmin methylsulfate have been presented.

2. The drug has been found useful in treating menstrual delay as well as in establishing the presence or absence of pregnancy in such cases.

3. Theory and practice of the combined therapeutic-diagnostic procedure are discussed.

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356 Eastern Parkway

THE TREATMENT OF VAGINAL TRICHOMONIASIS WITH AQUEOUS SOLUTIONS OF IODINE*

GEORGE BLINICK and MILTON ROBINSON
New York, N. Y.

Vaginal trichomoniasis is difficult to control by means of therapy now available. Remedies for the treatment of this condition have come and gone in endless succession. For none of the methods of therapy thus far reported can more than moderate success be claimed.

The study to be reported here was undertaken in an effort to revaluate an old and well established remedy. Following the pharmaceutical tradition of the early nineteenth century it has been customary to use iodine solutions locally in high concentration. The seven percent tincture dates from the days when it was considered advisable to get as much iodine as possible into solution and to keep it there. But investigations during the past ten or twelve years have shown that iodine is a much more active antiseptic than was formerly believed, and that solutions, aqueous as well as alcoholic, containing two percent or less of iodine may be efficient antiseptics. Iodine is actively germicidal in concentrations as low as 0.02 percent.

With the availability of a highly efficient aqueous solution containing only 1.85 percent of iodine (1) it appeared possible that this might afford an effective means of treating vaginal trichomoniasis while avoiding the irritative properties of the alcoholic iodine preparations that have been used in the treatment of vaginal infections (2).

The aqueous iodine solution employed in this study is one that was developed about ten years ago by G. M. Karns (1). Because it is nearly saturated with respect to its iodine content, this element tends to precipitate out whenever anything disturbs the solution equilibrium. On contact with epithelium of skin or mucous membranes, or with other tissues, this solution rapidly deposits a heavy concentration of iodine. The iodine so deposited penetrates rapidly (4). Because the amount of sodium iodide present is in a concentration isotonic with human tissues, virtually no nerve irritation is produced on application to inflamed or denuded surfaces. This aqueous solution differs from the tinctures in the means whereby free iodine is deposited on the tissues. The tinctures deposit iodine by evaporation of the alcoholic solvent! The aqueous solution described does not require drying; the iodine precipitates out of the solution on brief contact.

For a period of approximately a year and a half, patients with vaginal trichomoniasis were treated at the Beth Israel Hospital Gynecological Clinic by the following procedures:

*Aided by a grant from the Iodine Educational Bureau, Inc.
From the Department of Gynecology, Beth Israel Hospital, New York.

Method of Procedure

1. Regardless of clinical signs or previous finding of trichomonads, treatment was not instituted in any case unless motile trichomonads were found in a specimen of the vaginal secretion suspended in normal saline.

2. The vagina was then cleaned and dried with cotton pledgets. An aqueous solution containing iodine 1.85 percent and sodium iodide 2.20 percent (1) was then instilled into the vagina and all parts of the mucous membrane from the fornices to the vestibule were thoroughly swabbed with the solution. With the speculum in situ, the excess fluid was allowed to accumulate in the posterior fornix, and the patient was kept on the table in lithotomy for an additional thirty seconds. The excess was then absorbed with a cotton pledget. This was done at weekly intervals.

3. The patient was instructed to douche once daily, except on the day preceding and on the morning of each visit to the clinic, with a solution made by adding one tablespoonful of the iodine solution mentioned to one quart of water. This douche has an iodine concentration of approximately 0.03 percent (3). Patients were advised to take douches in a reclining position, preferably in a bath tub, and to compress the labia against the douche nozzle intermittently so as to distend the vagina and assure intimate contact of the solution with all surfaces.

The patient was further instructed to omit douches during and immediately following each menstrual period until after the first subsequent visit to the clinic. Specimens for microscopic examination were always taken at this time. No special instructions regarding perianal or perivaginal hygiene were given. Except for incidental investigations in three cases, no effort was made to search for trichomonads in feces or urine or in the husband's prostatic fluid. In most cases intercourse was not interdicted.

4. Treatment was continued for one month after the first negative microscopic examination. If examination after the next menses was also negative, treatment was interrupted and the patient was instructed to return to the clinic at monthly intervals. After three successive monthly examinations had been negative for trichomonads, the patient was discharged as cured.

If during the course of therapy and observation, when wet smears were negative, local symptoms persisted, other causal agents were searched for.

This study entailed more than five hundred applications of the 1.85 percent aqueous iodine solution to the vagina and cervix of more than fifty patients, and more than three thousand applications of the dilute solution as a douche. Only two patients complained of irritation, and in only one was it necessary to substitute other treatment. No objective ill effects were observed in any case. There were no cases of dermatitis medicamentosa reported in the partners.

In the majority of cases symptomatic relief was definite and rapid. Because of the marked relief usually obtained it was difficult in some cases to persuade the patients to continue treatment and observation until the three negative microscopic examinations at monthly intervals had been completed. Elimination of the trichomonads usually did not keep pace with the clinical relief, except in a few instances in which a relatively long period of treatment was required before the trichomonads disappeared. Some of the patients obtained little symptomatic relief from the iodine. Usually these had resisted other therapy as well, and had had numerous recurrences. Of the patients treated in this study, only thirty-eight can be considered in evaluating the efficacy of the remedy. Some of those eliminated had inadequate or irregular treatment; others failed to return for subsequent examinations. Of the thirty-eight patients to be considered here, twenty-nine completely fulfilled the requisites already mentioned and had three or more smears as a check on the efficacy of the treatment.

Of these twenty-nine patients, twelve had three or more successive negative smears and were free of all symptoms after periods of treatment ranging from six weeks to six months. Thus, using the most rigid possible interpretation of the results and under conditions of treatment which were relatively favorable for recurrence and reinfection, two-fifths of the patients may be considered cured.

Because of the difficulty of getting some of our patients to return for subsequent check-ups in the absence of symptoms, in a number of cases only one or two negative smears were obtained. Some of these undoubtedly continued to be symptom-free; others may have sought treatment elsewhere. If one takes the original group of thirty-eight and considers as "cured" all the cases in which there were no symptoms after therapy and two or more successive negative smears were obtained, then more than half, or twenty cases, may be considered successfully treated.

In five cases that had not responded to other forms of therapy, such as green soap and peroxide scrubs, Lassar's paste, an arsenic preparation and lactic acid douches, a favorable result was obtained with iodine. Seven patients who had failed to respond to other therapy likewise failed to respond to iodine. Among the failures in this series were one luetic, two patients with striking signs of acriboflavinosis[1], one of whom was a diabetic, two patients who were pregnant and one patient with bloody diarrhea in whom trichomonads were found in the feces.

[1]V. P. Sydenstricker (Clinical manifestations of nicotinic acid and riboflavin deficiency (pellagra), *Ann. Int. Med.* 14:1499 (Mar.) 1941) has pointed out that nonspecific vaginitis may be one of the features of deficiency in the vitamin B complex. The rôle of such a deficiency in the susceptibility to trichomoniasis and the resistance of this disease to local therapeutic measures undoubtedly deserves serious study.

Comment

Vaginal trichomoniasis is notoriously difficult to treat successfully. It is especially so in clinic patients, who often lack adequate facilities for personal hygiene. Under the best of circumstances, the therapy must usually be applied for a protracted period and recurrences are frequent.

In the study reported here the chances for success were known to be adverse, because a deliberate attempt was made to simplify the therapy the better to evaluate the therapeutic agent. The authors purposely did not instruct the patients in the fine points of vaginal and anal hygiene, including the proper use of toilet tissue, or in most cases in the restriction of cohabitation.

The aqueous iodine solution employed was applied full strength only once a week. Douches were omitted for approximately thirty-six hours in each week so that the presence or absence of a discharge could better be detected on clinical examination. Douches were omitted during the menstrual period and thereafter until the first subsequent visit to the clinic when microscopic examination of the discharge was made. It is possible that more frequent direct application of the agent by the physician, and more regular douching without interruption during the menses, would have increased the proportion of cures.

Summary

1. An aqueous solution of iodine 1.85 percent and sodium iodide 2.20 percent was applied to the vagina once a week in the treatment of vaginal trichomoniasis, together with daily douches containing 0.03 percent of iodine.

2. Using rigorous criteria, twelve out of twenty-nine patients were cured.

3. Favorable results, and probable cures, were obtained in twenty out of thirty-eight cases treated.

4. Rapid symptomatic relief was the rule.

5. Five patients who had not responded to other forms of therapy over a protracted period were cured with the iodine preparation employed.

6. More than five hundred applications of the iodine solution were made to the vaginas of more than fifty patients and more than three thousand applications were made as a douche. Irritation occurred in only two cases.

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1165 PARK AVENUE

Symposium on War Medicine and Public Health

MEDICAL RECORD

PUBLISHED MONTHLY BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

JUNE 1942

PUBLIC HEALTH AND THE DRAFTEES

IRA S. WILE

New York, N. Y.

Wars destroy men and undermine civilizations but they also stimulate efforts to promote human survival so that civilization may be advanced. Man's triumph over infectious diseases has been such that one may say that the developments of modern preventive medicine constitute a primary factor in the prolongation of current wars. This is illustrated by the fact that during the Mexican War, approximately one hundred years ago, one hundred and ten soldiers died from disease for each one suffering death in and from battle. During the Civil War, the experience of the Northern Army was that sixty-five died from disease and thirty-three from wounds. In the Spanish-American War of 1898, twenty-six soldiers perished from disease to five from wounds. In the first World War, for the first time in the history of man, the figures were reversed and only nineteen died from disease for each fifty-three who suffered from wounds of battle.

What will be the results of the present war? It is difficult to state, but there is ample evidence that public health work will have been improved immeasurably because of the greater need and demand for safeguarding the general public health. During the World War, the ratio of deaths among civilians to those occurring among the military, was 1:75, whereas recent figures in England indicate that the ratio has changed to 1:3. This means that public health is waging war on a new battle line; in broken homes, in air raid shelters, in communities to which homeless, anxious and young people have been evacuated, in areas where there is a struggle for adequate nutrition, a need for better medical care, and a greater subjection to the strains and stresses of a war of unusual suddenness and brutality.

A highly trained personnel, compulsory vaccination against many preventable diseases, will supplement a broader control of sanitation. A more intelligent appreciation of the importance of protecting water supplies and employing communal canteens, the use of mobile hospitals adequately outfitted, will lessen disease, malnutrition and infection. The development of sulfa drugs and the modernization of our medical armament and surgical methods undoubtedly will yield unusually low mortality figures from diseases and wounds among civilians, as well as among active members of the army and navy.

The soldier of today is subject to training such as was never before necessary because armies must be fitted to live in gear with organized, mechanized, motorized battalions. Sailors are trained to live in the relatively stuffy, cramped and hazardous quarters of submarines. Millions of young men have taken on wings enabling them to range over oceans and lands, five miles in the air, fully equipped to meet conditions of inadequate oxygen, rapid changes of pressure and sudden forced adjustments of bodies nosing out of destructive dives.

What kind of men are these? Are they weaklings whose existence tells of a betrayal of our standards of living? Do they represent frail, underdeveloped, poorly nourished, vitally deficient individuals? They are the products of the economic, social and public health standards of the past generation. A large proportion of them were born since the beginning of the last great war. Do they support Hugh Cabot's implied and direct accusation (1). "Fortunately we are no longer required to continue the endless argument as to whether good medical care is now being received. The plight of the draftees has proved up to the hilt that the statement is false."

If they are physically unfit, what is the state of health of the world in which they have lived? The figures tell the story. In 1918, the death rate from all causes, was 1,264.5 per hundred thousand, as compared with 615.5 in 1941. For tuberculosis, it was respectively 202.2 and 40.9; for pneumonia, 131.8 and 23; for appendicitis, 11.6 and 7.2; for syphilis, 19.1 and 9.1; for accidents, exclusive of battle deaths, 84.3 and 53.0. The increase of deaths from automobile accidents is shown by the rate 10.0 in 1918 and 20.4 in 1941. This rise is readily explained by the fact that between the two periods automobiles increased six hundred percent.

Furthermore, the frequency and fatality of ordinary contagious diseases declined. Thus from 1918 to 1941, the mortality rate of typhoid fever fell from 12.0 to 0.4; measles, 10.2 to 0.8; diphtheria, 21.7 to 0.7; whooping cough, 5.0 to 0.7. These formerly severe diseases of young people reflect the accomplishment of public health efforts and they suggest that the draftees of the current army have not been exposed to exceedingly severe diseases that could undermine their general vitality. The fact is that our modern army trainees

may be soft, may not have used their legs as much as did their parents, and may have been accustomed to a life of more ease with motor cars and liquor, with late hours and greater freedom from responsibility, but they possess the physical vitality necessary to meet the requirements of the army, navy and marines. They should not be viewed either as weaklings, or as evidence of public health inadequacy during the past thirty years.

What are the facts, and on what basis should the physical state of selectees be judged? The Selective Service System is concerned with men who are "chosen for a year of training and service, and for ten subsequent years in the reserve. The men chosen for induction should, therefore, be thus clearly capable of undergoing the physical demands and the mental stresses of military service and who may reasonably be expected to remain capable of service at any time during their years in reserve status, should war come upon us". This statement was issued in May 1941 by Lewis B. Hershey, Deputy Director of the Selective Service System. There is a further note, more important today than ever, in the light of our type of warfare: "Physical defects and ailments are not the only cause for rejection; mental and personality deficiencies are of coordinate importance. Not only are the feebleminded and the 'insane' unsuitable, but so also are certain of those handicapped people who are now doing well in civilian life only because they have found ways of protecting themselves from undue stress, by seclusiveness or by peculiar performances and odd habits of life."

There are thousands of young men, thoroughly adequate for adjustment in civilian life, who are not first class soldier material under conditions of war. Physical unfitness must be interpreted to mean a total unfitness, and total unfitness involves a lack of complete integration of the personality. The strength of an army or navy depends upon individuals who live up to their full responsibility for the safety of their fellow combatants. Unstable, discontented, depressed, suspicious, stupid, dull, queer persons are not dependable in emergencies. Nor are those with marked seclusiveness, somnambulism, insomnia, ready fatigability, or the unrestraint of active homosexuality. The protection of the whole army must be recognized as the important element in the selection of draftees. Far more hazardous to group welfare than mental deficiency and lack of initiative, are convulsions, acute alcoholism, rising psychoneurotic anxieties, directive obsessions, rapid shifts of mood or other trends that can hamper personal relationships. Who is selected is more important than who is rejected, while ample selectees are available and time permits careful examination.

The classification employed in the selection of draftees attests the need for careful diagnosis before induction into the army. The basis for disqualification for mental conditions is far more elaborate than the simple regulations of 1864 (2), which disqualified drafted men for: (a) manifest mental imbecility, (b) insanity, (c) epilepsy, in addition to such general disqualifications as conviction for felony and dipsomania.

During the Civil War (3), the rejections for disorders of the intellect among the drafted men of the Northern Army was 4.1 per thousand examined; for syphilis, 8.2; for insanity, 0.77; for all diseases of the nervous system, it was 12.0 per thousand. Total rejections for all defects were at the rate of 206.3 per thousand, although it was only 220.7 for men between the ages of twenty and twenty-five years, and 421.3 for those forty years old and over. Recognizing the differences in diagnoses and diagnostic methods and the limitation of personnel as well as the several years of voluntary enlistments during the war, these figures are very significant. This becomes more apparent as later experience is reviewed and compared with current statistics.

Approximately fifty years later, there is a change in the data. During the World War the rejections for nervous and mental defects was at the rate of 33 per thousand men; for epilepsy, 5.15; mental deficiency, 12.06; constitutional psychopathic personality, 0.44; neurasthenia, neuroses and hysteria, 0.89; dementia præcox, 0.65; manic depressive, 0.18. The grand total rejection rate for all mental alienation was 15.08 per 1000 examined (4). These figures represent refinement in diagnosis, an extension of interest in psychiatry and the development of a neuropsychiatric service as part of the military organization. The official figures represent progress in the development of a public health concept which had been too long neglected, namely, that mental health is an integral part of a public health approach to communal well-being.

Coming down to our present day army, certain facts must be recognized. Those physically fit for service are being selected. Emphasis is properly placed upon selection rather than upon rejection, because today men are needed to live through a new type of warfare. They are being selected in terms of fitness for living under conditions no longer determined mainly by immunity, or resistance, to infectious diseases. The current history of our army in training is important, especially in the absence of statistics concerning the effects of severe and prolonged exposure to bombing, to inadequate food and to interrupted sleep under such tropical conditions as were experienced by our forces in Bataan.

During the Spanish War, 4,800 per hundred thousand soldiers suffered from typhoid fever, with 525 deaths. In the first half of the year 1941, there were but three cases in our newly-trained army, and no deaths. In 1917, the total death rate of our army was 171 per hundred thousand; in 1941, it was 8 per hundred thousand. In 1917, there were 9,165 army injuries and 112 deaths per hundred thousand soldiers, whereas, in 1941, according to estimate, the total will be 14,800, and only 120 deaths. This is all the more remarkable in the light of increased dependence upon mechanized units and the greater variety of machinery to be operated, which in themselves offer a very great hazard.

Between November 1917 and May 1918, the death rate of the army in training was ten per thousand, per year. During the same period of 1940-41, the death rate for the army in training was less than one per thousand, per year. This alone is striking evidence of the public health work carried on within the structure of the army, but largely due to methods of selection as well as of protection. Because of obvious differences in the organization of the groups, physical condition, occupation and mode of life, four times as many civilians of the same age group as those in the army died of typhoid fever, nine times as many died of tuberculosis, two and one-half times as many died of pneumonia during the same period. This does not

necessarily mean that the army groups selected were so much more fit, as that the combination of their fitness, their training and the army life under discipline, medical supervision and medical protection, made them far superior in vitality to those of their fellow groups in civilian life.

In the World War, sixty-four percent of the registrants examined were classified for general military service (5); seventeen percent were accepted for limited military service and nineteen percent were disqualified for any type of military service. The current figures (based upon a report of approximately twenty thousand registrants examined by Selective Service and local boards) reveal the total rejection for any form of military service as approximately twenty-five percent. In this connection, it is important to recall that the age distribution was between twenty-one and thirty years during the World War, while it is twenty-one to thirty-six in the first report on our draftees. This is necessary because disqualification always increases with age. Thus only 33.4 percent of thirty-five-year-olds are now deemed qualified for general military service, as compared with 61.1 percent of those twenty-five years of age, and 84.3 percent of eighteen-year-olds. For qualified military service, the figures are 32.6 percent for the thirty-five-year-olds, 19.6 percent for the twenty-five-year-olds and only 5.2 percent for the eighteen-year-olds. Similarly, the disqualification for all military service for thirty-five-year-olds is 34.0 percent; for twenty-five-year-olds, 19.3 percent and only 10.5 percent for eighteen-year-olds.

These variations in figures at once suggest that the great majority of disqualifications for military service are not the results of public health inadequacy in the treatment of youth during childhood and adolescence, but that a large proportion of the defects which disqualify for partial or complete service are incidental to the manner of living after physical maturity has been achieved. This figure is strikingly important because there has been so much ballyhoo about the failure of our method of caring for the generation at present under scrutiny. The total disqualification rate at age twenty-one, for example, is 12.8 percent, whereas at age thirty-six, it is 35.7 percent. This demonstrates the presence of many factors entering into fitness for war service other than insufficiency of public health service. Occupation, mode of life, accidents during industrial life cannot be ignored in studying personal handicaps of selectees.

In addition, it must be borne in mind that many registrants are rejected today whose defects could not have been detected during earlier wars because of the present employment of techniques earlier unknown. Never were standards so high and examinations so thorough. Never before were chests examined by x ray; never before were Wassermann tests extensively employed to detect latent syphilis; never before were such careful examinations being attempted to exclude men whose mental condition is doubtful. The increased medical care in selection is further reflected in the examination for defects that support the expectancy that some figures of 1941 would be much higher than those of 1917-18. This improved medical service accounts for the slightly higher percentage of disqualifications for all military service in 1941-42 over that of the World War.

During the last war there were only 468 defective men per thousand men among the 2,750,000 examined. The random sample analysis of today indicates that about fifty percent of approximately two million registrants have been found unqualified for general military service. This number must be reduced, so far as physical well-being is concerned, because approximately ten percent of the rejections were due to lack of educational qualifications. About fifty-two percent of those rejected for physical and mental reasons were qualified for limited military service, and only forty-eight percent of those found to have defects were totally disqualified for any military service. There is approximately three percent difference between the number of defective men per thousand found in 1941 and those noted in the World War.

A table of comparisons of a few of the reasons for total rejection merits attention.

Ratio of Defects Per Thousand Examined

	1918	*1941*	
Tuberculosis	24.86	5.7	
Syphilis	56.69	34.9	
Mental deficiency	12.06	12.0	(including educational deficiency and illiteracy)
Mental disorders	15.08	18.2	
Defective vision	40.74	115.7	
Teeth	13.54	140.3	
Hernia	38.92	64.6	
Feet	128.72	145.0	
Musculoskeletal	32.93	111.3	

It is difficult to make complete comparisons because the diagnoses are not always clearly defined, but the tabulation itself suggests some important changes, especially in the increases for mental disorders, defective vision, teeth, hernia, feet and musculoskeletal defects.

The report of examinations reveals that many of the conditions for which draftees are rejected are congenital and others are unpreventable. Some are secondary to diseases with a diminishing mortality rate, others are due to medical and surgical progress which fosters the survival of those with limitations later excluding them from military service but not from civilian activity. For example, dental deficiencies were responsible for the disqualification from general military service of 20.9 percent of the registrants disqualified, while defects of the eyes and impairment of vision were responsible for another 13.7 percent. These two causes accounted for 34.6 percent of all the registrants rejected as unqualified for general military service. In addition, 10.6 percent were disqualified for defect or disease of the cardiovascular system; 6.8 percent for musculoskeletal conditions; 6.2 percent for hernia. These account for 58.2 percent of those disqualified by physical defects for general military service.

This majority does not represent the results of neglect which can be attributed to inadequate public health service. It is doubtful whether one can even claim that the dental defects are incidental to lack of an adequate level of nutrition. The case for vitamins and minerals is still open. There are insufficient data to assert that failure to meet very high dental requirements is the result of insufficient nutrition. One need only think of the differences in the extent of dental caries among Negro children nurtured in the North and in the South, to appreciate that it is due to factors not wholly dependent upon nutrition. If men are meas-

ured by normative standards there are few who meet them. With knowledge of nutrition still incomplete, judgment concerning its effects upon the nation should be less dogmatic.

Hernia is generally accepted as a congenital condition. Among preventable defects causing rejection, which are practically unrelated to early prophylactic public health service, are the sixty-three percent classed as venereal. Such defects are in sharp contrast to the small proportion of rejections for lung defects, including tuberculosis—only 2.9 percent. The conditions responsible for the 4.6 percent ear defects might have been added to the preventable list as probably due to infections, some of which might be attributable to insufficient medical service. But this is doubtful. The nervous and mental disease rejections responsible for 6.3 percent of the disqualifications for general military service, have not yet been sufficiently broken down to permit careful analysis. It is clear, however, that the registrants as a group do not present the serious state of physical inferiority due to failure to receive needed medical care, which is alleged to be responsible for their rejection for general military service.

It is rarely pointed out that twenty-nine percent of the total registrants examined were recorded as free from any defect, as is recognized by Colonel Rowntree (6). He calls attention to the fact that defective feet accounted for the largest number of diseases and defects recorded and comprised 10.7 percent of the total number of defects tabulated, while dental defects, the largest cause of rejection, comprised 10.3 percent of diseases and defects. In connection with these items, he states: "In addition to nondisqualifying defects, a large proportion of disqualifying defects are minor as far as health conditions are concerned. Many defects are a cause for rejection for service in the army but in no way hinder the performance of many civilian occupations." He then proceeds further by noting: "There seems to be little doubt that most of the registrants classed as available for limited military service, and a proportion of those classed as disqualified for any military service in the United States Army, evidence health conditions which would be acceptable for military duty in any army in Continental Europe."

These then are the significant items from the viewpoint of public health. Our present army contains probably the healthiest group of men who have ever worn a uniform. Their physical state, as well as their very existence, is a tribute to public health achievements and to the unusually high standards demanded for acceptance in service. It is well to remember that (7) "eleven percent of men between the ages of twenty and forty-four are among us simply because of improvement in mortality experience since 1900". This means that of the "9,000,000 new registrants of this month, eleven percent or 1,000,000 are included in our man power because of our advance in medicine and public health, as well as our rising standards of living". Including those registered in the first draft, the gain in man power in this country is 2,800,000, or a number equal to the total draft army of 1917-18.

Most significant is the importance of considering the mental health problems in connection with this draft. Much progress has been made through the efforts to eliminate mental defectives, those mentally incompetent and those unfitted by personality organization for full war service. The wider employment of psychiatrists and psychiatric social workers, and the broadened appreciation of the early symptomatology of mental deficiency and mental disorders, should result in lessening potential inefficiency in the army, navy and marines. All individuals unfitted to meet combatant conditions, should be determined and promptly rejected or discharged for inaptitude.

The army is aware of this problem and recognizes that it is not possible to diagnosticate all who would constitute mental war casualties. Wars have always brought mental strains, even in the days when they were merely classified as nostalgia. The Surgeon General has estimated that three per thousand men in the army will be discharged only because of a mental disability. According to present indications, approximately three hundred and fifty are admitted weekly for psychiatric examination out of an army of a million and a half men. Many are returned to duty, others are given honorable discharges for inaptitude, if they have been in the service less than sixty days; still others are referred to an Army General Hospital for further study. A discharge for inaptitude does not indicate that the selectee cannot readjust successfully to civilian life.

The increased emphasis upon careful screening by the Selective Service and the army is effecting a very definite decrease in the number of mental deficients, epileptics, alcoholics, psychoneurotics and psychotics in the armed forces. A present problem is the difficulty in securing a sufficient number of experienced psychiatrists to facilitate this very necessary service for induction boards. Such psychiatric personnel is imperative for the selection, classification, screening and servicing of men with mental peculiarity or disease at induction camps and army hospitals.

Undoubtedly, by the time this war is well under way, the program for elimination of unsuitable registrants will be improved. The military and medical authorities realize that the health and morale of the forces in the field depend upon the exclusion, so far as is humanly possible, of registrants with personality defects, neurotic or psychotic behavior. Rejection or elimination is also indicated for men with patterns potentially harmful to the psychic health of units of command because this basic organization enters into the maintenance of morale among larger groups. The homosexual is a hazard, although he may have health and vigor; the dipsomaniac is a threat, although he may develop episodes only under strain; the early paretic is recognizedly irresponsible; but the man with incipient schizophrenia is the greatest liability, because he more easily escapes recognition. The diagnosis of this group involves more thorough work than is possible through routine examinations by neuropsychiatric officers placed in corps area at the rate of "one such examiner for each fifty selectees to be examined daily by examination boards under their supervision".

The symptomatology of many mental conditions is not always directly evident, especially during a period of remission. For this reason, the government recognizes that communal cooperation is requisite for the elimination of this type of potential casualty. This fact is interesting because the utilization of communal efforts is a practical phase of public health service. It should be highly significant for health officers to recog-

nize that the Adjutant General appreciates the importance of excluding from military service all individuals inducted, or volunteering for service, who are found to be mentally unfit. An official direction concerning the examination of registrants with mental records suggests another advance in public health: "When the local board examining physician knows or hears of a history of mental disorders in the family of the registrant, or of social maladjustment, poor word record, or other mental or personality conditions of the registrant, that might cause ultimate rejection of the registrant, the examining physician will note the facts on the Physical Examination Report (Form 200), or on a memorandum attached thereto. In such cases, the examining physician will seek and review information obtained from social agencies, school systems, State Hospitals and training schools for defectives, bearing on the personal and social history of the registrant. In such cases, the examining physician will find that the registrant is not manifestly disqualified for general military service and will report to the local board that the registrant should be forwarded to an examining station of the armed forces for final examination and determination of acceptability.

"Where the examining physician, as a member of the community, has knowledge of epilepsy, idiocy, imbecility, or history of commitment for mental disease, the examining physician will find the registrant is disqualified for any service". This direction constitutes an advance in public health methods as it utilizes all the facilities of a community in order to establish the degree of mental health of citizens for fulfilling their most serious obligation, namely, the defense of their communities and their country.

It is not necessary to discuss the psychiatric casualties arising during the course of army life. The Selective Service organization is excellent but further advances are essential to organize the psychiatrists of the army and to train large numbers of men with limited psychiatric experience to facilitate the early discovery of men unfitted for soldiering. The full meaning of public health will not be achieved until those disqualified for inaptitude, or rejected because of existent mental incompetency, receive the treatment necessary to rehabilitate them to the highest degree of fitness for carrying on their lives in effective and happy occupation at the civilian level. This is as important as correcting dental defects or curing hernia and venereal disease.

The public health problem of today is far less one of the army than of increasing service to the civilian population. The physical health of the new registrants attests the scientific advancement since the last war. It indicates that our national resources have been excellently employed in the promotion of health and the conservation of vitality. This war will make a further contribution to our efforts to maintain and increase national vigor. There is but one great hazard to the generation constituting our armed forces, and that inheres in war itself, the archmonster which feeds upon generations of men.

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264 West-Seventy-third Street

MILITARY PILOTS' VISION

M. MARTYN KAFKA
Brooklyn, N. Y.

In the present state of interhemisphere war, we all know that the health of the pilot is most important. Particularly vital to the safety of the military and naval aviator is a perfectly functioning visual apparatus, for in the take-off and the landing of military aircraft, normal vision is of immeasurable importance for the avoidance of a serious crash. In flight, as well, the eyes play a tremendous part in keeping the aeroplane suspended. Instrument flying or blind flying has made it necessary for the Flight Surgeon to give careful and detailed attention to the hygiene and function of the eyes of military pilots.

Many years ago it was considered unsafe to fly blind, and thanks to Colonel William Ocker, U. S. Army Air Corps, in the past fifteen years this has been so, for it has been proven that blind flying is really the safe method. Hence, it is not essential to place so much emphasis upon the complicated vestibular tests. With the required scientific instruments, any well trained pilot can be instructed to fly blind and in perfect safety. But the aviator must learn to understand that his ears do not give him proper information; rather the instruments he sees, and learns to read, reveal the exact orientation for his complete safety. However, it is to be remembered that there must be normal internal ears which are working properly.

About twenty-five years ago, pilots scorned the idea of instruments as a guide to flying; but as time progressed and more knowledge was attained about precision instruments related to flying blind, aviators began to realize that safe flying could only be done by the proper application of instruments.

Blind flying instruments, as the magnetic compass or the crutch, Sperry gyro-horizon, the directional gyro, the turn and bank indicator, the altimeter, rate of climb and rate of speed indicator, all help to make flying safe. The aviator is also assisted in equalizing his mind against confusion due to misinterpretation of his vestibular senses. In the past years aeronautical disasters have principally been caused by bad weather flying, in fog and storm; hence blind flying really is an ability to operate a plane without being able to see the earth and when the position cannot be attained because of presence of heavy fog, milky clouds, thunder, dust and snow storms as well as in city blackouts.

Simulated blind flying is the use of vision in referring to precision instruments placed on the dashboard of the aeroplane, but the aviator does not refer to the earth for spatial position. This is known as flying under the hood or "instrument flying."

There is also the importance of muscle and vestibular or kinetic static sense for pilots, or "the feel of the plane" or "seat sense" while operating aircraft. With the aid of sight associated with the aforementioned, equilibrium is maintained in the air. So with these three senses, one is able to interpret the position, speed of motion and direction, as well as his orientation to the terrestrial mass.

Visual Deficiency Tests

The visual acuity of the right and left eyes of the pilot is checked by the use of properly illuminated Snellen test types at six meters distance; 20/20 must be obtained. Jaeger one is passing for near vision. Incidentally, a flying cadet is disqualified if he does not see Jaeger one and a pilot is given correction for his goggles if he does not obtain a Jaeger one. To be used as well is a phorometer trial frame which should be equipped with multiple Maddox rods right and left, Risley rotary prisms, right and left (or prisms with Maddox rod and trial frame from trial lens case) also a spotlight one cm. in diameter which is set at six meters distance from the examinee; to check extra-ocular muscles.

A red lens test should be done besides the prism divergence test, and the associated parallel movements are checked. External parts of the eyes should be inspected with good illumination and the condition of pupils observed. (Flying cadets or flying cadet candidates who show pathology other than an hordeolum, small cyst, are disqualified.) Accommodation with the use of the Prince rule with card, or Thorne rule, is investigated. Angle of convergence is computed by obtaining the near point of convergence and interpupillary distance.

Central color vision may be checked by the Ishihara test and Stilling's pseudochromatic test and three sets of Holmgren's wool.

The field of vision is tested with the use of a perimeter, and the Bjerrum tangent screen curtain or blackboard with tangent rule is utilized if necessary. A campimeter, if on hand, may be used for a cross check on the field of vision.

Refraction under a cycloplegic is also performed and a retinoscopy is carefully done, preceded by an ophthalmoscopic examination to rule out any existing pathology of the media or fundi. Cadets showing errors in refraction, as ametropia in all its variants, of a marked degree, are disqualified. For example, under a cycloplegic, the total of 1.50 diopters in any meridian and any finding of over plus 0.50 or minus 0.50 in any axis is considered to be disqualifying for a flying cadet candidate. When a pilot develops visual deficiency, this is corrected with lenses which are incorporated in his goggles and he must wear the corrected glasses during flight. If an aviator develops any pathology of his external eye, he is grounded until it is cured. If the media or fundi become diseased, the pilot invariably is grounded and only when his visual apparatus resumes a normal condition is he permitted to fly again.

Depth perception test of thirty millimeters or less is considered passing. Those who show thirty mm. or less are said to be free from nervous, ocular or general defects. Individuals show signs of persistent parallactic angle over 103 seconds or less, and so will, therefore, average thirty mm. from zero for many trials. Good depth perception indicates an ability to operate an aeroplane and will show good judgment. Defective depth perception may be due to inequality of vision, refractive errors from accumulated ocular fatigue, and may show up in accommodative asthenopia, heterophoria and insufficiency of convergence. Those individuals who have poor depth perception will project the rods on repeated trials from fifty to one hundred and seventy-five mm. away from the zero mark.

When anisometropia exists, one eye may have 20/20 vision while the other shows 20/50 or less. However, in some flying cadets undergoing flying training accumulative fatigue may be produced, and so on certain occasions can land the plane skillfully, but at other times general physical strain and mental anxiety tend to create a reduction in accommodating powers. Hence the objects are not brought into the focal point and it follows corrective lenses usually reduce the condition to normal.

Pathological Conditions Affecting Vision

It is important to rule out diseases of the sinuses, since optic nerve pathology may develop under such conditions. Infections of the sinuses may produce a retrobulbar neuritis which in turn may cause marked visual deficiency of either or both eyes. Temporary blindness may be caused by a severe ethmoiditis or sphenoiditis. Any of these conditions may be created after sustained flight in high altitudes where the temperature sometimes reaches twenty degrees below zero.

One must not forget that foci of infection in the teeth or tonsils may be responsible factors in visual disturbances. No permanent correction of eye disease or refractive errors can be obtained unless chronic infections of the teeth, tonsils and sinuses are eliminated.

A poorly balanced diet, with absence of proper vitamins, especially vitamin A, will be a common cause of night blindness in pilots. When night flying becomes a part of the duties of the military aviator, it is important that he be carefully checked for the presence of night blindness. And sustained flight in bad weather will usually increase eye fatigue if the daily intake of vitamin A is lacking. When clear weather flying is performed, the glare from the sun with reflections over bodies of water or from the plane itself, may irritate the eyes if properly fitted goggles, with suitably tinted lenses, are not worn.

502 PARK AVENUE

THE PROBLEM OF TUBERCULOSIS IN THE PRESENT MOBILIZATION FOR WAR*

EDGAR MAYER and ISRAEL RAPPAPORT
New York, N. Y.

The purpose of this communication is to call attention to the potential dangers of tuberculosis under the present war conditions. We believe this threat is a real one and will no doubt materialize unless a continuous and timely effective plan of prevention is carried out with great vigor.

Furthermore, there seems to be need for a timely reminder that tuberculosis prevention in this war is a far different problem from that of the last war. We are now in the midst of a shift into a new phase of the epidemiology of tuberculosis. With this have come changes in the pathogenesis as well as in the clinical aspects of tuberculosis, the proper interpretation of which is still a matter of discussion within the ranks of tuberculosis specialists. Yet it is on the basis of that interpretation of current experience that the scheme of prevention will have to be worked out.

It is timely, therefore, to discuss now the present situation in tuberculosis and its probable effects upon the army of young recruits from the viewpoint of the preventive scheme to be adopted. Open as our current experience is to variable interpretation, it is needless to say that the following is our own analysis of the present situation. Predictions of its probable effects upon the young recruits are based on our analysis of the current problems. From these we shall attempt to deduce principles of prevention which now seem logical and necessary.

The Present Status of Tuberculosis

This is best described by comparing it with the past so that the changes will become apparent. A generation ago tuberculosis was past its epidemiological peak and well under way on its downward course. However, it was still the most prevalent infection, the mortality and morbidity of which bulked large just because of its great prevalence in the population at large. More than three-quarters of the people were infected before they reached adult life and half during childhood. Tuberculous infections then implied not only first infections but also repeated exposures which maintained a permanent allergy, as manifested by persistent hypersensitiveness to tuberculin (positive tuberculin reactions). The morphological expression of these infections were not only the healed Ghon foci but also apical secondary foci (Simon, etc.). The latter, as we know, represented residues of the early postprimary mild lymph-hematogenous spread which so frequently resulted then from primary complexes.

Chronic progressive pulmonary tuberculosis issued mainly from such apical residues and was therefore an endogenous exacerbation of tuberculous lesions already within the body. Bearers of such old tuberculous residues, mostly in the apices, were quite numerous then among young adults and it was mostly from among these that the victims of progressive pulmonary tuberculosis were recruited.

For that generation, those likely to develop chronic pulmonary tuberculosis had their source lesions already present in the lungs before they passed the age period of about eighteen to twenty-five years. These lesions remained capable at any time of subsequent exacerbation under adverse conditions of life. They frequently flared up under the strains and stresses of young adult life (entrance into student life, into army life, into married life, into business life, etc.). The peak of mortality and morbidity from tuberculosis occurred in this period of life.

In that generation, those who overcame their first infection without having residual secondary lesions of a character capable of subsequent exacerbation, were practically insusceptible to exogenous reinfection for the rest of their lives. This conclusion may be safely drawn from the fact that opportunities for reexposure were so constant in the environment at that time few could have escaped repeated reinvasions. However, the latter served only to maintain a high degree of hypersensitiveness to tuberculin throughout life. It is a logical presumption that this hypersensitiveness played a rôle in establishing the resistance to exogenous reinfection in the vast majority of people in that generation. Also, presumably, it may have been a factor in keeping alive the old infection and in favoring endogenous exacerbation of the latter whenever the vitality of the individual ebbed. This is still largely true in the older generation at present. Frost believes this to be responsible for the present peak of morbidity and mortality in middle age.

In the present generation we find tuberculosis in an entirely new epidemiological phase marked by a decline in the morbidity and mortality which is unparalleled in the record of history of this affliction of the human race. This decline is undoubtedly associated with a proportionate decrease in the rate as well as the intensity of the infections (Frost). Not only have infections from childhood greatly decreased in incidence but such as occur have greatly diminished in intensity. We see now that many infections are delayed into adolescence and early adult life. Also *many early infections do not leave permanent hypersensitiveness to tuberculin.* It has been shown repeatedly by recent observations that it is *no longer possible to rely now on tuberculin reactions as an indication of whether a tuberculous infection has preceded or not.* An ever-increasing proportion of tuberculin negative individuals have undergone a tuberculous infection so mild that their primary lesions have healed very rapidly and completely. Not having been exposed for a long time the tuberculin hypersensitiveness of these individuals too wanes.

Also, recent observations have shown that, particular-

*This paper was read at the annual meeting of American College of Chest Physicians in the spring of 1940. It was withheld from publication because of doubt that it would serve the best interests to have stressed just at that time any threat to the army which was about to be organized then. However, the fact that the trend of current statistics, indicating a rising tuberculosis morbidity amongst civilians of some of our large population centers, is unfortunately already bearing out the predictions we made repeatedly in the last two years (*J.A.M.A.* 115:1295 (Oct. 12) 1940, and 118:1179 (April 4) 1942), prompts us to publish this paper at this time. We are convinced that its message is still timely.

ly in young adults, progressive pulmonary tuberculosis develops under conditions of exposure far more frequently among those negative to tuberculin than it does among those who were tuberculin-positive.

From these two very striking new developments in tuberculosis, recently observed, one of us drew the conclusion that a new pathogenetic factor, which has developed in association with the recent epidemiological shift, is now operating in the evolution of an unusual form of tuberculosis, the incidence of which among young adults has recently been rising. Rationalization of recent experience seems to justify the theory that evanescent first infections and lack of contact with tuberculosis fail to endow many of the young people of today with the type of insusceptibility to exogenous reinfection which prevailed in the previous generations in our midst. Indeed there arises the distinct possibility that *second exogenous tuberculous infections bring about a very abrupt rekindling of the previously already waned allergy, with the result that the second tuberculous lesion often tends to take the form of an extensive infiltration with considerable caseation,* followed promptly by liquefaction and bronchogenic dissemination.

Lack of contact and weak first infections not only fail to produce permanent insusceptibility to subsequent reinvasion but even appear to leave the individual more susceptible to such a second exogenous reinfection, which is likely to be more severe than the usual first exogenous infection. All of this would explain the puzzling fact that while in the previous generation the vast majority of children have been able to overcome their first infections so lightly, many of our young adults now develop progressive lesions from their contact infections, many of which now represent undoubtedly second exogenous infections of the type just described.

How is this Likely to Affect the Army?

A comparison with the tuberculosis in the army of a generation ago will be helpful.

In the army of the last war there was an unavoidably high incidence of tuberculosis for obvious reasons. In that generation the tuberculous infections were generally very high in the first part of life. Many young people were bearers of old tuberculous lesions capable of subsequent exacerbation. The peak of mortality and morbidity from tuberculosis coincided with the military age, twenty to thirty-five. Mostly the cases of progressive pulmonary tuberculosis which then developed in the army, represented endogenous phthisis by exacerbation of preexisting lesions rather than infections acquired during army life.

What the status of tuberculosis will be in the future army cannot be predicted with any degree of certainty. It will depend greatly on the measure of success that our preventive campaign will achieve. The predictions we venture to make here, are intended rather to show what the situation could be like should we fail in our preventive efforts.

Seemingly there is every reason to believe that tuberculosis in our future army should show the same decline which prevails now in the population at large. The age group in question must show a vastly diminished incidence of infection. Whereas a generation ago, over seventy percent of persons who had reached the age of twenty were already infected, not more than thirty-five percent will have been infected in this generation. As to tuberculin sensitiveness, the number of tuberculin negatives in that age group will show an increase over the previous twenty-five percent, to an average now of about sixty percent. A proportionate decrease may confidently be expected in the number of bearers of old tuberculous lesions in that age group, and so we may look for a lesser number of endogenous exacerbations. Accordingly, tuberculosis from the sources which played the main rôle in the last war will show a substantial decrease.

This great advantage will, however, be counterbalanced, we believe, by the fact that newer developments have created a large number of new susceptibles in the ranks of the incoming recruits. We consider this statement justified for the following reasons:

1. A large part of the young recruits will be uninfected; most of these will get their primary infection during army life.

2. A large part of them will have had evanescent infection which, as explained above, increases susceptibility to progressive exogenous reinfection.

3. Because of delayed first infection many will have recently acquired their yet incompletely healed primary complexes, more prone to exacerbate.

All three forms recounted above are prone to take an unfavorable course under the stresses and strains of military life and give rise to progressive forms of tuberculosis in a greater proportion than would be the case otherwise.

What are the probabilities that the above mentioned three-fold threat will actually materialize in the young army of incoming recruits? Military mobilization is known to bring about a rise in mortality and morbidity from infections of all kinds. Unimpeded flare-up of infectious diseases among young military units is stimulated by two factors; the too rapid bringing together of large numbers of susceptible young men with large numbers of carriers and the quite natural but too energetic efforts to force military training and physical hardening at a pace too strenuous for the relatively soft recruit. That the young recruits include a great many who are susceptible to tuberculous infection is clear from the facts mentioned. That there will be too rapid collection of large numbers of susceptibles with carriers is also clear. Large numbers of youths from an environment of relatively low levels of tuberculization will be suddenly thrown into an environment of comparatively high level of tuberculization.

A careful x ray survey at entry should of course largely eliminate carriers from the army itself. However, we believe there is more to fear at first from contact with civilian carriers (relatives, friends, new acquaintances in the new environment). Eventually carriers will develop in the army itself from the newly infected.

Preventive Program to be Adopted for the Army

Current overemphasis on prevention of tuberculosis at entry in the army is inadequate. It is now to be expected that the vast majority of our youth will at first be singularly free of tuberculous infection. Experience of the closest x ray surveys now carried out for a number of years at many institutions throughout the country indicates that sole reliance upon entrance x rays

for elimination of those having tuberculous lesions lulls one into a false sense of security. In spite of careful x ray checkup of all entrants there is constantly occurring a certain number of freshly arising cases and a not infrequent acute progressive form of tuberculosis, the early discovery of which requires the continued repeated x raying of the whole personnel.

The present danger to the army is the development of new cases during army life. Carriers in the early subclinical phase of new infections are likely to abound. These in turn are likely to become sources of exposure to the army's susceptible youths.

Early recognition and elimination of these newly arisen cases will be the crux of the problem of prevention. In the scheme to be adopted now, emphasis should be shifted to the earliest possible discovery of tuberculosis in these young recruits while in the army. The measures to be taken to assure this earliest discovery represents a problem, chiefly because of the vast number to be kept under constant surveillance. This would imply the frequent periodic examination of all men (fluoroscopy and x ray), particularly of all those suspected for any reason (temporary ailment, etc.). In short, prevention of tuberculosis in the present army cannot hope for success unless it is organized in the form of an uninterrupted survey embracing the whole personnel.

For the present, one cannot do more than outline the general principles along which the campaign should be started. To begin with, the general scheme of the modern tuberculosis surveys might be followed with such special adaptations as will be required by the exigencies of the existing conditions in the army. The final scheme will have to be elaborated in the light of practical experience of the tuberculosis situation as it develops. Preparedness, mental and material, for whatever situation may develop, will be most essential to the success of prevention of tuberculosis in the army.

470 Park Avenue
64 East Fifty-eighth Street

CORRECTING PHYSICAL DEFECTS IN APPLICANTS FOR AVIATION TRAINING

SAMUEL MEREDITH STRONG
New York, N. Y.

America is at war. We are in the midst of the most severe contest this country has faced in its history. Conservation and maintenance of our national materials are necessary if we are to survive, and man power is included under that heading. The maintenance of our fighting forces and our civilian population is a paramount issue. No effort or cost can be too great. The younger Americans are the backbone of this country.

The American Flying Services Foundation maintains a Medical Division whose objective is the repair of the physical defects of the young men who desire to serve in the flying forces of the Army and Navy. It has been demonstrated in the physical studies to date that a large percentage of young American men have physical defects which, according to regulations, would debar them from becoming aviation cadets of the Army and Navy. When these young men are of a makeup that qualifies them as officer material and as aviators but have some correctible physical defect, they may be referred to this Foundation and we place them in the hands of highly qualified physicians and surgeons for such treatment, medical or surgical, including dentistry, and hospitalization, as may be required for the correction of these defects to make them acceptable and available as cadets for the flying services.

The physical standards, as set up by the Army and the Navy in their regulations governing physical examinations for aviation cadet applicants, should not be lowered. Probably no class of human beings will ever be placed under greater stress than aviators in times of war. Only those of the highest physical standards can survive under the great stress of the centrifugal forces of turns at high speed. There is, and has been for some time, a clamoring by some who do not understand the stress of flying for a lowering of the standards of physical requirements in order that the young man who believes he should become a pilot may become one. As physical standards for aviators are lowered, so will the aeroplane crash rate be increased. This department is interested in maintaining high physical standards. It is interested in assisting every man with the proper qualifications to overcome his correctible physical defects and to become part of our air forces.

We are also interested in assisting our Government whenever it is possible. Many of our young men who want to fly are not physically or mentally constituted to do so efficiently. The general makeup of the efficient pilot is such that we classify him as a bit different from other highly efficient personnel in other branches of the service, just as one might say that birds are quite different from other forms of vertebrate animals. The procurement of a sufficient number of efficient pilots will, I believe, be quite a task for our air services. I believe I am correct in saying that the Army alone desires twenty thousand pilots per month. That adds up to two hundred forty thousand pilots per year. At that rate the question will arise, What can each one of these pilots stand? What effect will engine fumes and gases, high velocity turns and diving have on him? These men will have to be physically fit just to keep alive at high altitudes without adding the other stresses of flying. All of these difficulties must be overcome, but to do so we stress the necessity of the highest possible physical and mental fitness of every pilot, not only on his entrance into the service but the constant maintenance of efficiency in this type of human being.

The young men we are putting into the air service today have lived their lives in an atmospheric pressure of between fourteen and fifteen pounds to the square inch. We are going to require that they operate efficiently under an atmospheric pressure of perhaps three and one-half pounds to the square inch. Some of these young men may have been out in temperatures of thirty degrees below zero for a few hours at a time, but we must think of them operating efficiently a high

powered aeroplane at perhaps fifty degrees or more below zero. We know that all of us on the earth's surface are moving through space at the rate of a little more than twelve miles a second. This has no effect upon us because the atmosphere is moving at that rate with us. We know that the average pedestrian passes through space at the rate of from three to four miles an hour. Perhaps a number of our aviation applicants have traveled in automobiles for a short period of time at eighty, ninety or one hundred miles an hour. One really has to think in these figures to get a rough idea of what happens when in an aeroplane you assume a speed of three hundred to four hundred miles an hour, which is equal to one mile every nine seconds, at a difference in atmospheric pressure between fourteen and one-half and three and one-half pounds to the square inch. The effect of high velocity diving and the centrifugal force of high speed turns in aeroplanes has caused a rather high crash rate in all countries. The effect on the blood circulation resulting in temporary anemia of the brain may cause unconsciousness. One need not be a specialist in aviation medicine when considering the above mentioned facts, to realize how important it is that we start with and maintain the highest possible physical standard that can be obtained in the young man power for this work. Even in the schools of aviation which require something like thirty-five weeks of intensive training, the young men taken from our comfortable civil life go through a hard grueling requiring the highest physical standards. Unfortunately a high percentage of these candidates are not able to tolerate the stress. They succumb. They are disqualified for flying. We have a certain percentage of loss of this valuable human equipment in the first stages of training in aviation.

We have in the United States a fair number of American boys endowed with the necessary nervous stability, the general makeup of efficient officer material with the necessary educational standards and the intelligence to apply their knowledge and to acquire new knowledge so necessary to aviation. They are physically fit, with the possible exception of some minor physical defects which can be corrected, and will be put in the highest possible physical and mental class to make the much desired aviator for our forces. These socalled "minor defects" are all-important. Without their correction the man would fail as an aviator. A socalled minor nasal obstruction sufficient to interfere with a sufficient flow of air might cause change in the pressure on the nasal sinus, frontal sinuses, antrum and middle ear resulting in congestion and marked pain; might interfere with hearing, or might even create hemorrhages, and possible rupture of the ear drum. Men will not perform efficiently under such circumstances. It therefore behooves us to see that such an obstruction is removed with the expectation that such disturbances would be prevented. The Medical Division of the American Flying Services Foundation has as its function just this type of work.

The Flight Surgeons of the Army and the Navy, who examine these boys, unofficially refer them to us, and we welcome the opportunity to correct the defects which are indicated. Wherever these boys are located within the boundaries of the United States they may be referred to us, and through our regional medical committees we arrange for such surgical procedures and hospitalization, medical treatment or dental treatment, including the installation of nonremovable dentures as may be necessary, and we finance the procedure. We pay the doctors, the hospital bills and the dental bills, bearing in mind first of all the use of the applicant's own family physician or his own dentist wherever this is possible and desired by the applicant, informing the doctor of the procedure that is desired by the aviation examiner. We request prompt action and thorough treatment. Upon the completion of treatmen the chairman of our regional committee informs this office of the physical condition of the applicant and the fact that they believe him to be ready for reexamination. We then give him a letter referring him back to the Flight Surgeon who examined him, requesting that he reconsider the applicant for aviation cadet status. The majority of the cases so handled are, upon reconsideration, accepted as aviation cadets. We in the Medical Division of this Foundation do not establish the physical standards and we do not dispute the physical standards. We pride ourselves that we attack the defect specified by the Flight Surgeon who originally examined the boy and that only. We do only those things that we are asked to do but we see to it that it is done with the greatest efficiency in the shortest possible time. This then is the conservation of our national man power.

Frequently in our correspondence with the medical profession we are confronted with the opinion from our associates that certain operations, such as that for a deviated septum, are not necessary to the man's welfare, or perhaps we are told that weak inguinal rings do not require surgery. As I have said before, we do not attempt to interfere with the regulations as laid down for the physical condition of pilots. The standards are set; we believe in them. The cure of an inguinal hernia and the maintenance of sturdy inguinal rings are necessary if our pilots are going to work at high altitude. Relatively slight changes in barometric pressure may cause marked distress on any section of the body filled by gas or air. Gases in the gut expand and unless these expanded gases are evacuated there may be sickening results of pressure within the belly, which may expand to the extent of pressure upon the diaphragm, embarrassing respiration. It might well force a hernia through a weak inguinal ring. The preservation of this valuable man power for aviation must therefore go through any necessary repair procedure to provide strong inguinal rings. One can easily see how a good pilot might be incapacitated under reduced atmospheric pressure when expanding gases in the gut create the symptoms indicated above. Do not let us misinterpret what I have said above. High altitudes with the accompanying decrease in atmospheric pressure do not cause an expansion of the body tissues as such. The blood vessels do not increase their internal pressure because of less external pressure. The human body is made up of a very high percentage of water. Fluids are not easily compressed. The decrease or the changes in pressure from one altitude to another do not lead to the expansion and contraction of the human body. Only the gases in the hollow viscus are affected. Of course, nitrogen air bubbles may be released in the blood stream causing a number of unpleasant and dangerous symptoms. Sometimes these air bubbles are released within the cavity of some of

the larger joints, such as the knee, causing temporary, highly painful symptoms.

Dental problems are the cause of many discussions with those not familiar with the effects of flying at higher altitudes. When dentures become necessary only fixed dentures may be used. There are too many times in flying when a sudden jolt or a socalled air bump might so jar the human body as to create a sudden reflex severe inhalation, which might result in the dislodging of a removable denture, causing its aspiration. This would be a severe and dangerous accident which might readily cause a fatal crash. Many cases of cardiovascular instability are referred to us. These are frequently trying problems. Some of the cardiologists have said "Put these men in the Army and they will automatically establish a stable cardiovascular system." But we are under the stress of war. We are facing the problem of the survival of the fittest. A good prospect for aviation cannot be just placed in the infantry for a year or two that he may stabilize his cardiovascular system before he becomes an aviation cadet. He must be processed by physical training, by diet or other means, without the use of drugs, to create stable blood pressure with a pulse of the force, rate, and rhythm to withstand the rigors of altitude and high velocity flying, at the same time stabilizing him so that emotional changes will not too greatly upset this stability.

It behooves every doctor cooperating with us in this work to try and look at each problem from the Flight Surgeon's point of view; to think always of the unusual conditions under which we are asking our aviators to work, particularly oxygen starvation, reduced atmospheric pressure, and the great speed at which they are traveling through space. We are taking excellent material with minor defects, correcting these minor defects to make these individuals highly efficient, that the minor defects may not lead them into major physical deficiencies under the conditions of flying. We are by this method adding to the number of available aviators for our Army and Navy. This is repair of material.

The following are some of the conditions we have been asked to treat: acne, albuminuria, defective angle of convergence, unstable cardiovascular system, catarrhal conditions, color blindness, defective speech, dental caries, needed dentures, defective depth perception, dermatitis, diplopia, defective hearing, eczema, esophoria, exophoria, exophthalmus, eye muscle imbalance, fainting, furunculosis glycosuria, hay fever, hemorrhoids, hernia, hydrocele, hyperphoria, hypertension, hypospadias, limited motion of knee, malocclusion, deviated septum, overweight, phimosis, phlebitis, pilonidal cyst, refractive error, rhinitis, low Schneider index, strabismus, tachycardia, atrophied and undescended testicles, hammer toes, tongue tremor, infected tonsils, tuberculosis, underheight, underweight, unstable cardiovascular systems, unstable nervous systems, varicocele, varicose veins and defective visual acuity. Of course not all of these conditions are correctible.

Once these men have become qualified, finished and active aviators, this material must be maintained. Eventually these same men will meet with catastrophies; if kept too long at high altitude and working under high velocity flying, they will succumb to the rigors of this work or will suffer the results of physical injuries. When this occurs the problem of the repair of material again faces us. Fractures may be repaired and other tissue damage healed in the standard type military hospital anywhere in the world, but again to bring about the stability of the nervous system, the stability of the cardiovascular system with its accompanying relation to the nervous system; to restore the mental determination; to again bring about the ambition to fight and to accomplish things, to change from the state of fatigue and neurasthenia to a state of high physical stability with all the desires and ambitions and determination to accomplish difficult feats, will require something more than the standard military hospital.

The Medical Division of this Foundation is anxious to establish health ranches, equipped and maintained with a view to accomplishing these things. A quiet, restful, peaceful, attractive environment is desirable, with a personnel especially trained in the study of the physical requirements of aviators. The equipment should include everything needed for a study of the physical condition of the patients—electrocardiographs, x rays, vital capacity measurement, metabolism tests, chemical laboratory—in fact, any and every detailed bit of equipment that would be necessary or desirable in the complete study of every individual during his entire stay in such a resort, together with every means to encourage outdoor life and physical activity, every health producing bit of athletic equipment, golf, horses, swimming, as well as the simpler things. The atmosphere of encouragement, stimulating interest in life and the surroundings to bring back to a normal condition those who have learned to believe they were living on borrowed time and not altogether enthusiastic about its extension. Air neurosis and breakdown of good coordination is the result of high tension and dangerous flying. The fatigue and asthenic conditions produced by aviation have such tendencies.

We hope that we shall acquire such a place. We believe we know where such a place should be located and how it should be conducted to the advantage of the daily life of these patients. Moderate altitude, mild climate, and a maximum number of bright days per year are desired. Special studies of the endocrine system, special attention to the restoration of the normal function of the glands involved, wholesome, well prepared and attractive meals, using as far as possible locally produced and carefully selected food stuffs served in a bright and cheerful atmosphere.

Under such conditions it is our belief that we can again restore these highly valuable experienced and efficient pilots to their normal state of physical and mental health, making them again available for full military duty in aviation or, if they are not needed there, preparing them for a standard productive efficient civil occupation. We believe these young Americans to be the backbone of this nation. No effort or expense is too great to overcome physical handicaps they may have started with or which may be the result of war activities, and to restore them to a high physical state of health. This is the ambition and the intent of the Medical Division of the American Flying Services Foundation. We must prepare such a service soon. Time is shorter than you think.

140 East Fifty-Fourth Street

ARMY RECRUITING*

JOHN W. SHUMAN, SR. and ROBERT F. BENNETT
San Francisco, Calif.

Just what it takes to make a good soldier is not the whole task of the Army recruiting examiners because they must also visualize what kind of a veteran the selectee will make. These two estimations include mental, physical, and temperamental fitness; all the way from flat-feet to flatheadedness, and must be made rapidly. For this job, no better doctor can be had than those with experience in the first world war and who have served in Veteran's Hospitals since then. Thus they would have had an opportunity to check on medicodental errors of that war.

The first difficulties encountered were training officers to recognize partial blindness and deafness; dental defects; heart and lung difficulties; ruptures and varicosities; holes in ear drums; joint and muscular defects; brain and foot weaknesses; and a lot of other things. A common statement was, "Aw that shouldn't keep him out of the Army!" Another hard thing was to get the defects written on the work sheet so the civilian stenographers could read them; also the terminology written so that the records would be accurate when read by the selectee, his relatives, friends, and often his local physician, as well as members of his home draft board. A copy of each selectee's examination is mailed to him by the Director of Selective Service from Sacramento, Calif.

Prior to December 6, 1941, the examining boards had to be on the alert, because malingerers often tried to escape. For example: Not being able to read 20/20, unable to hear 20/20, or feigning some other defect. "Back trouble" is still one that is hard to determine, even when they bring their own x rays and letters from family physicians. On the eye test, as soon as a malingering selectee found that his bad vision had not kept him out, he often was able to see plainly.

For a short while only, after December 7th, it was necessary to keep a close watch on those with physical defects who tried to cover them up and get into Class 1-A when they actually belonged in Class 4. This, of course, was due to the momentary hysteria following the Pearl Harbor episode.

Many junior medical officers and most of the public cannot understand why the Army should not take the unfit and kill them off and leave the fit home to procreate. Some still cannot understand why the Army does not take the defectives who are surgically correctable and cure them. Others were pretty sure that drunks, thieves, liars and mental defectives could be furnished new brains and morals by the Army. The local draft boards, for the most part laymen, are of that opinion. One board brought a candidate who had been rejected by another examining board on account of lordosis, who had a severe backward curvature of the spine. This candidate must have talked enough to embarrass the local board because they brought him in twice, and as far as we know, he is still in Class 1-B. No sergeant could have made a soldier out of him.

The Army doctor has been severely criticized for disqualifying draftees. Memories of the hysteria of the first world war which swept the Army with "Go kill the Kaiser", such defects as glass eyes, artificial limbs, tuberculous lungs, leaking hearts, club feet, and constitutionally psychopathic personalities, make the doctors realize that the makings of a soldier begin somewhere back in his grandfather's time.

Many people are like the short sighted judge who had before him a young culprit found guilty of breaking the law. His sentence was, "Ninety days in jail or join the Army!" Thus, putting a curse on the Service.

Speaking of evading active duty, there was the twenty-eight year old attorney who wore a truss with its knob on the left to hold a rupture back in his left groin. But he had no rupture on that side. However, he did have a hernia in his right groin. Was he surprised!

Even in this mechanized age, the main part of the Army travels on its feet. Flat feet are of two types: first, those born that way and need no treatment, for example, the Negro, Indian, Oriental and Hebrew; second, those made flat. The second type are those which get along fairly well in the twenties, but a few years later when their owner puts on ten or fifteen pounds more body weight and he has lost his elasticity, his foot arches break. If a soldier's pack is put on the back of one of these men and he is forced to march five miles, he becomes an ambulance case. He is then ready for a pension, "Service Connected!" All the foot specialists in the world cannot put his feet back together again.

Selectees who now come before the Army examining boards with artificial teeth are put in Class 1-A if the teeth are serviceable. The only possible way to ascertain if these false teeth are serviceable is to ask the candidate, "Can you chew?" However, if he breaks or loses a denture in the field, he becomes a casualty.

Why is it that so many of our young men have poor teeth? Is it diet? Is it fear of the dentist's drill? Perhaps it is the combination of these, or their economic status. They may not be able to pay the tariff demanded by modern dentists.

On the other hand, the Japanese lads who appeared were not rejected on account of bad teeth. Where their teeth were missing, the vacant spaces were replaced by bridge work of the finest quality. Those young Orientals showed no inferiority complex by hiding their mouths when they had a missing front tooth or two. It is a fact that they and the Filipinos usually had had a bath before appearing for examination. Not true of too many whites!

It should be remembered that a soldier with dental pain has a demoralizing effect upon all those with whom he serves. If an army travels on its stomach, let us pick an army that will be able to masticate food and not have to swallow it whole.

The local board president was quite chagrined at the number of his board's draftees who were turned down on psychiatric faults. He brought a number of rejected charts back with him and a rejected selectee. This draftee was just over the minimum for weight and height. He had been rejected as of group VI, an alco-

*Observations made during four months (December, 1941 to April 1, 1942) with Traveling Examining Board No. 3 out of San Francisco, Calif.

holic. His village was quite desirous of getting rid of him. The rejectee frankly admitted he drank heavily but said, "I can quit". The president of the board was asked if he, as a veteran of the last war, would want such a soldier in his company. Unhesitatingly, he answered, "No!" After that, he would not show any more of the rejected charts.

This neuropsychiatric examination has made a lot of people think. One of the big reasons was because of the vast number of constitutionally psychopathic inferiors in the last war, who had to be cared for. Only a few of these ever saw actual service. They had been inducted, clothed, fed, armed, and before they really gave any service for their country, were hospitalized and still are, in one way or another, many drawing pensions. From April 1, 1917, to December 31, 1919, the number of neuropsychiatric soldiers admitted to government hospitals totaled 97,657. With the Army now in the process of building, will history repeat?

444 Market Street

FOR NATIONAL DEFENSE: THE COORDINATION OF GASES USED THERAPEUTICALLY

*With Special Reference to Asphyxial Accidents**

PALUEL J. FLAGG
New York, N. Y.

The *New York Times*, February 14, 1933, carried the following news item: "Doctors form society aimed at saving fifty thousand lives now needlessly lost yearly; organize to check asphyxial death; new society announced at a meeting of the Society of Medical Jurisprudence at the New York Academy of Medicine".

The new society referred to, The Society for the Prevention of Asphyxial Death, or the S.P.A.D. as it is usually called (1), had commenced a movement which in the nine years which were to follow would make the American physician "asphyxia conscious".

Organized medicine was quick and generous in welcoming the new movement. First to offer support and assistance was the New York Academy of Medicine, through its director, Dr. Linsley R. Williams. The Committee on Public Relations endorsed the new movement and assisted in the preparation of a full day conference in Hosack Hall, supported by an exhibit and demonstrations which took place May 24th.

The conference, the first integrated effort of its kind, brought to a focus many new points of the problem. Vital statistics were discussed by Dr. Shirley Wynn, assisted by Dr. Haven Emerson. The medical examiner's findings were brought out by Dr. Harrison Martland, and discussed by Dr. Thomas Gonzales. The economic aspects of asphyxia were pointed out by Albert H. Whitney and discussed by Leon Senior. First aid methods employed by the Police Department were described by Dr. Daniel J. Donovan. At the afternoon session papers were read by Dr. Chevalier Jackson, and discussed by Dr. Charles Imperatori; by Dr. Yandell Henderson, and discussed by Dr. Dayton J. Edwards; by Dr. Edmond B. Piper, and discussed by Dr. H. J. Stander; by Dr. Pol Coryllos, and discussed by Dr. Horatio Willims.

I have taken the liberty of drawing attention to the character of the support accorded this first conference. The medical press accorded it full publicity. The *Journal of the American Medical Association* presented an editorial and sixteen columns of abstracts (2). Lay press notices before and after the conference appeared in New York State (3), Ohio (4), Tennessee (5), Michigan (6), Pennsylvania (7), West Virginia (8), and elsewhere. The movement to prevent asphyxial death was on its way.

Then came the Century of Progress with an exhibit on asphyxia (9). Later, the Lake Keuka (N. Y.) Medical and Surgical Association meeting on July 13th and 14th. By this time Surgeon General Cummings, United States Public Health; Surgeon General Rossiter, United States Navy; and Surgeon General Patterson, United States Army, had joined the Advisory Board of the S.P.A.D. In less than a year, the Medical Society of the State of New York (May 14, 1934) and the American Medical Association (June 12, 1934) had approved its aims and purposes.

On May 16, 1934, at the one hundred and twenty-eighth annual meeting of the Medical Society of the State of New York, held in Utica, a symposium on asphyxia was presented (10), which Dr. Chevalier Jackson declared, in a communication (11), to be "Just about the most perfect presentation of the subject we have ever heard."

Increasing and broadening interest in asphyxia found expression the following year, in a two day conference, held at the Biltmore Hotel, New York City. Participators in the program included Drs. Horatio Williams, C. H. Watson, Charles Norris, Howard W. Neail, Henry Hall Forbes, James J. Walsh, Harrison Martland, Alexander O. Gettler and Wendell Phillips; General C. R. Reynolds, Colonel F. L. Devereux, Dr. John D. Kernon, Dr. R. R. Sayers, Major Fox and Colonel L. H. Bauer, Captain E. W. Brown and Dr. M. H. Foster. At the closing banquet Dr. W. P. Northrup and Dr. John Hartwell appeared.

Once more the *Journal of the American Medical Association* devoted eight pages of abstracts to the papers presented (12) The scientific success of the program was equalled only by its economic failure. The conference was handicapped by a printer's strike which held up its mailing of fourteen thousand booklets (13) and programs, so that many of these were not received until after the meeting. The famous blizzard of February 1934 struck it fairly amidships. Dr. Chevalier Jackson wrote (14): "I had a farmer out with a good strong team to break the road but he came back and reported that the horses would stop when they got into the snow up to the collar. I am

*Read before the Society of Medical Jurisprudence, at the New York Academy of Medicine, February 9, 1942.

sorry that this heavy storm synchronized perfectly with the morning of the meeting."

In 1935 a memorable scientific exhibit on asphyxia was held at Atlantic City. Fourteen booths were subsized by the scientific exhibit of the American Medical Association (15). Among the features of this exhibit were asphyxia from allergy, anesthesia, asphyxia neonatorum, foreign body obstruction, asphyxia in diphtheria and croup, asphyxia viewed by the medical examiner, asphyxia relieved by oxygen therapy, municipal control, Yonkers, New York, ambulance and beach patrol, Atlantic City.

The following year, 1936, saw the appointment of a Committee on Asphyxia by the Board of Trustees of the American Medical Association (16).

A model department of gas therapy was established in a suburban hospital by the society (17). The director was made Municipal consultant in the prevention of asphyxial death to the City of Yonkers, N. Y. During the year, contact was established with the superintendents of all the hospitals in the United States with a capacity of one hundred beds or more. Invitations were sent to seventeen hundred hospital superintendents to serve on a committee to study asphyxia from the point of view of hospital administration; 335 acceptances were received, of which twenty represented hospitals of two thousand beds or more. Forty-six states were represented. Invitations were also sent to all anesthetists in the country, 338 appearing in the National Directory; 177 responded to serve on a committee to study asphyxia from the point of view of anesthesia. Both of these committees finally lapsed owing to the impossibility of securing funds to operate them. It would be difficult to estimate the value of the creation of these committees, however, as a means of drawing the attention of these key men to the problem of asphyxia.

In 1937, the Committee on Asphyxia of the American Medical Association made its report which was accepted by the House of Delegates (18).

In 1938 the society received an invitation to take over the asphyxial problems in connection with the New York World's Fair. This invitation was accepted as it presented an opportunity to organize and operate a model department of gas therapy or pneumatology. The Medical Department of the Fair secured and made available a modern assembly of equipment geared to the needs of the hour, and proposed a working model for the integration of gases. This integration is the subject which will be discussed.

In an address delivered at the official opening of the Division of Pneumatology at the New York World's Fair, the speaker said: "We commemorate on this occasion the one hundred and fiftieth anniversary of the opening of the Pneumatic Institute of Sir Thomas Beddoes, at Clifton, near Bristol, England in the year 1789. The famous pneumatologists, Priestley, Lavoisier, Sir Humphrey Davy and Sir Thomas Beddoes employed gases for the treatment of clinical diseases. Half a century later the pneumatologists, Long, Wells and Morton, revolutionized the practice of surgery by the introduction of the gases nitrous oxide and ether, for the control of pain. Oliver Wendell Holmes called this practice anesthesia. Finally, Haldane, Meltzer of the Rockefeller Institute, and others developed research and technique for the use of gases for the saving of life, turning the attention of the profession to the necessity of modern methods of resuscitation. This evening in the presence of Admiral Ross T. McIntire, Surgeon General of the United States Navy, your distinguished guest speaker, in the presence of the president of the American Medical Association, Dr. Nathan B. Van Etten, and before the Medical Director of the New York World's Fair, Dr. J. Peter Hoguet, we, the Board of Directors of the Society for the Prevention of Asphyxial Death offer this division, equipped with the most modern devices, for the control of pain, the saving of life and the treatment of clinical disease, for the protection of the guests and the personnel of the New York World's Fair, and with the hope that every hospital in the world of tomorrow will possess a functioning department of pneumatology."

It may be noted that the equipment referred to, representing a value of more than six thousand dollars, was subsequently crated and sent to the British Red Cross in England where it is now in use. I quote a paragraph from the Director of the British Red Cross, dated London, Nov. 28, 1940. "We have much pleasure in informing you that we have safely received the consignment of equipment for the prevention of asphyxial death which you so kindly sent to this organization through the British War Relief Society. We would be most grateful if you would convey to the Society for the Prevention of Asphyxial Death the appreciation and thanks of the War Organization for the generous gift of this valuable equipment, and in particular we would thank you for your work in securing donations to pay for it."

Mr. Thomas H. Clearwater then took the floor and questioned the speaker as follows:

Questions and Answers

Mr. Clearwater: Dr. Flagg, would you mind telling me just what is pneumatology?

Dr. Flagg: Pneumatology is the science of the use of gases for medical purposes. It includes anesthesia (gases for the control of pain), resuscitation (gases for the saving of life), oxygen therapy (gases for the treatment of clinical disease).

Mr. Clearwater: Is pneumatology a new idea?

Dr. Flagg: The year 1939 is the one hundred and fiftieth anniversary of pneumatology. This work began as the Pneumatic Institute of Sir Thomas Beddoes, of Clifton, near Bristol, England, as we have just noted. It fell into disuse because it was overshadowed in the middle of the last century by the use of gases for the control of pain, which was called anesthesia.

Mr. Clearwater: Is pneumatology a part of anesthesia?

Dr. Flagg: Quite the reverse; anesthesia is a part of pneumatology.

Mr. Clearwater: But does not anesthesia employ many other methods, such as local, rectal, intravenous, for the control of pain?

Dr. Flagg: Quite true, but the actual percentage of these methods is but a fractional portion of all general anesthesia. Without gases for the control of pain, present day hospital practice would be paralyzed.

Mr. Clearwater: Who runs the Department of Pneumatology?

Dr. Flagg: It includes physicians trained in anesthesia, resuscitation and oxygen therapy as well as all

first-aid groups or technicians active in these specialties. A Department of Pneumatology in every hospital would promptly reduce morbidity and mortality due to asphyxia.

Mr. Clearwater: What authority is there for this terminology?

Dr. Flagg: Leading medical dictionaries already use the term and many others have agreed to include it in their new editions.

Mr. Clearwater: What resistance exists to the adoption of the term?

Dr. Flagg: The subordination of more familiar terminology, and the fact that it implies extended obligations without ready remuneration.

Mr. Clearwater: About this exhibit; was this just another fair exhibit (20)?

Dr. Flagg: It was more than a fair exhibit. It was a department operating under the Medical Department of the World's Fair for the protection and the care of fair visitors. The equipment demonstrated was in use. We had a thousand square feet of space fully equipped for the administration of anesthetic gases; for immediate and prolonged artificial respiration, and for the treatment of diseases, such as pneumonia, asthma, cardiac conditions, etc. This service included the rooms in Field Station No. 3, ambulance facilities, and protection offered at the Sound Basin through the cooperation of the U. S. Coast Guard Cutter and the New York Police Marine service.

Mr. Clearwater: What conditions was the department equipped to treat?

Dr. Flagg: (a) Asphyxia from its many causes; (b) surgery requiring general anesthesia; (c) acute pulmonary condition as asthma, collapse of lung, acute cardiac failure, etc.

Mr. Clearwater: You have been talking a good deal about asphyxia, has any one ever assembled the causes of asphyxia?

Dr. Flagg: I can best answer your question by a slide which we will now throw on the screen. With a view of assembling the common causes of asphyxial death, any one of which might be expected to yield to adequate resuscitation measures, correspondence was established with departmental heads of physiology, pathology, toxicology, and forensic medicine at Cornell, Leland Stanford, Johns Hopkins, Bellevue Hospital, Harvard and Yale Medical Schools. As a result of these inquiries, the following causes of asphyxia have been assembled:

1. Asphyxia neonatorum.
2. Asphyxia from gases, used industrially: (a) Carbon monoxide from illuminating gas and from engine exhaust, coke and coal fires; (b) refrigerants such as ammonia, carbon dioxide and dry ice; (c) fumes in the manufacture of chemicals; (d) gases associated with the oil industry; (e) gases in the mining industry; (f) fumigation for disease, the destruction of rodents on board ship and elsewhere.
3. Asphyxia from gases in warfare.
4. Asphyxia from drugs, hypnotics, narcotics and sedatives, including acute alcoholism.
5. Asphyxia from disease, such as acute pulmonary conditions, asthma and cardiac decompensation.
6. Asphyxia from developmental and mechanical abnormalities, such as neonatal atelectasis and collapse of the lung.
7. Asphyxia from anesthesia due to overdosage, idiosyncrasy or a failure to meet mechanical obstruction, occurring in relaxation.
8. Asphyxia from submersion (drowning).
9. Asphyxia from flying at high atitudes.
10. Asphyxia from fire fighting (smoke, chemical poisoning).
11. Asphyxia from obstruction by foreign bodies: (a) Material caught in the esophagus or inhaled; (b) tumors or infections within or without the airway.
12. Asphyxia from electrocution.
13. Asphyxia from strangulation, garrotting, hanging, broken neck.
14. Asphyxia from allergy.
15. Asphyxia from terminal poliomyelitis.
16. Asphyxia from suffocation such as overlying, suffocation with soft materials, such as pillows, etc.
17. Asphyxia from external pressure on chest and abdomen, occurring when patients are caught between two moving objects, automobiles, elevators, laundry machines, etc.
18. Asphyxia from collapse of buildings, earth mounds, caves, sand, fire coal in large coal mines, land slides.
19. Asphyxia in manholes, walls, and declivities in the ground, usually from lack of oxygen and increase of CO_2 and sometimes from poisonous gases.
20. Asphyxia from polyneuritis and facial diplegia.

Mr. Clearwater: That's very interesting, but what bearing have these causes, if any, on national defense?

Dr. Flagg: The following slides will indicate, I think, the importance of the field of pneumatology in national defense:

U. S. Army

Poison gas problems.—Asphyxiation from carbon monoxide gas, automotive equipment, fire and smoke, gun emplacements, accidental electrocution, suffocation from collapse of buildings, earth mounds, land slides, etc., in transportation of the unconscious.

Army surgery: Gases for the control of pain (anesthesia); treatment of postoperative pulmonary complications.

Medical service: Pneumonia, cardiac failure, acute infections, etc.

U. S. Navy

Positive pressure probems.—Submarine air conditioning; asphyxia from submersion, carbon monoxide poisoning, external pressure on body, fire fighting, fumigation and dry ice on shipboard.

Naval surgery: Gases for the control of pain (anesthesia).

Naval medicine: Gases for the treatment of clinical disease.

U. S. Public Health Service

Industrial mining and utility gas problems.—Asphyxiation from gases used in the manufacture of chemicals; gases in the oil industry; fire and smoke; accidental electrocution; submersion; external pressure on chest and abdomen; gas in manholes and declivities; transportation of the unconscious patient; automotive vehicles.

Surgery: Gases for the control of pain in industrial surgery.

Medicine: Gases for the treatment of disease in industrial medicine.

U. S. Veterans Administration

Rehabilitation problems.—Gases for the saving of life (resuscitation) in intramural accidents; gases for the treatment of clinical disease (oxygen therapy); gases for the control of pain (anesthesia).

Air Service

Negative pressure problems.—Ground pressure and decompression equipment; conditioning and recording equipment for cabins of planes; equipment for fighter planes with open cockpits; gas equipment for parachutes; ground pressure equipment for postasphyxial accidents, pulmonary and cardiac.

The Use and the Control of Gases in the Medical Defense Program Operating Through the Army, Navy, U. S. Public Health, Aeronautical Service and the Veterans Administration

At this writing there is no coordination of research and practice between the five services or within the five services.

High pressure gas problems, low pressure gas problems, problems of poison gas control and the use of gases for medical purposes are separate activities. The proper understanding of each implies an acquaintance with fundamental factual matter and a familiarity with the clinical phenomenon of unconsciousness, accidental and induced. Lack of organization in the personnel of the medical staff results in untrained technical workers (nurses and corps men). Coordination is required for facts, equipment, research and instruction. Coordinator should be familiar with anesthesia, resuscitation and therapy.

Mr. Clearwater: Well, what about civilian defense? What can the doctor do to complement the work of the first aid squad in civilian defense?

Dr. Flagg: Let me state briefly the line of procedure indicated for the physician.

1. He should be prepared to diagnose the degree of asphyxia (21).
2. He should remove obstruction to the respiration by applying suction.
3. He should be familiar with exposure and inspection of the airway (22).
4. He should be able to deliver oxygen into the respiratory tract where it is most needed. Formal equipment is available, emergency equipment may be improvised.

Summary and Conclusion

The movement to prevent asphyxial death launched nine years ago at a meeting of the Society for Medical Jurisprudence has been successful in making the American physician asphyxia conscious. It appears clear that practical relief to be effective, turns upon a reintegration of the field of gas therapy. It is suggested that the historical background of pneumatology provides such logical integration.

The use of gases for the control of pain (anesthesia) for the saving of life (resuscitation) and for the treatment of clinical disease (oxygen therapy) constitute a major medical field.

It has a direct and important bearing upon national medical defense. Every hospital should have a smoothly functioning department of pneumatology.

This department should be directed by a staff physician who is trained in anesthesia, a physician familiar with the care of the unconscious patient. Such an officer will promptly make his presence felt in the community by assistance which he will render in the training and supervision of pneumatological technicians in resuscitation and oxygen therapy, operating outside the hospital.

First aid methods are valuable and should be encouraged. Courses to lay groups are now being given throughout the country. The great difficulty is to secure experienced and informed speakers. The society has suggested and employed phonograph recordings for the assistance of instructors. These first aid teaching records should be promptly and widely distributed over the country. Ten thousand dollars would permit the free distribution of between thirty and forty thousand recordings to first aid instructors.

First aid methods of resuscitation, however, are not enough; they must be complemented by medical diagnosis, suction, inspection of the airway, and suitable treatment.

It is urged that the original work of Sir Thomas Beddoes, begun in Clifton, in 1789, be carried on and developed by the creation of a modern pneumatic institute, with a program geared to coordinate the field of gas therapy in research, training and practice.

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38 EAST SIXTY-FIRST STREET

News Items

Harvey Lecture.—The eighth and last Harvey Lecture of this season was delivered at the New York Academy of Medicine, on Thursday evening, May 21st, by Dr. Eugene M. K. Geiling, professor of pharmacology, University of Chicago Medical School. His subject was the "Comparative Anatomy and Pharmacology of the Pituitary Body."

American Urological Association.—The thirty-ninth annual meeting of the American Urological Association was held in New York, June 1st to 4th, with headquarters at the Hotel Waldorf-Astoria. Dr. Cyrus E. Burford, of St. Louis, Mo., president-elect, was inducted into office as president, succeeding Dr. Oswald S. Lowsley, of New York.

Association of School Physicians.—The New York State Association of School Physicians will hold its annual meeting and conference on June 22d at the Grand Union Hotel, Saratoga Springs, New York, under the presidency of Dr. William E. Ayling, of Syracuse. An excellent program has been arranged on subjects of interest to school physicians, nurses, dental hygienists, health officers, and general practitioners. Dr. Michael Levitan, of Rome, N. Y., is chairman of the publicity committee.

Psychologists in War Work.—The American Psychological Association has established the Office of Psychological Personnel, to be operated under the auspices of the Division of Anthropology and Psychology of the National Research Council. This office will be concerned with the maximum, effective utilization of psychologists in the war effort. Dr. Steuart Henderson Britt is the executive director of the Office of Psychological Personnel with headquarters at 2101 Constitution Avenue, Washington, D. C.

The George F. Baker Pavilion.—The Board of Governors of the New York Hospital announces that the private patients' division of the hospital will be named the George F. Baker Pavilion in recognition of the part played by Mr. Baker and his son, George F. Baker, Jr., in the development of the institution. This pavilion, which was formerly a part of the general hospital, will thus become one of the six separate services conducted by the Society of New York Hospital which includes the New York Hospital, the Lying-In Hospital, the Children's Clinic, the Payne Whitney Psychiatric Clinic and the New York Hospital-Westchester Division. The dedication of the George F. Baker Pavilion will take place in September.

The Langley Porter Clinic.—The new Langley Porter Clinic, a one hundred bed Psychiatric Hospital maintained by the California State Department of Institutions in connection with the University of California Medical School and the University of California Hospital at San Francisco, Calif., will open on July 1, 1942. This hospital will have an eighteen bed neurosurgical ward, a sixteen bed children's ward, and a series of regular psychiatric wards, an outpatient department, an operating room, x ray laboratory, general clinical and research laboratories, including a special electroencephalography laboratory. The University of California Medical School will be in charge of all teaching and research work.

Meeting of Plastic Surgeons.—The annual meeting of the American Association of Oral and Plastic Surgeons was held in New York, May 28th to 30th, under the presidency of Dr. Jerome P. Webster, of New York. Clinics were held at St. Clare's; Presbyterian; Lenox Hill; Post-Graduate and Polyclinic Hospitals.

Association of American Physicians.—At the annual meeting of the Association of American Physicians held in Atlantic City, N. J., on May 5th and 6th, Dr. George Blumer, David P. Smith clinical professor at Yale University Medical School, was elected president, succeeding Dr. James H. Means, Jackson professor of clinical medicine, Harvard Medical School. Other officers were elected as follows: vice-president Dr. Warfield T. Longcope, Johns Hopkins University; secretary, Dr. Joseph T. Hearn, Cleveland; councillor, Colonel Hugh J. Morgan, U. S. Army Medical Corps.

Physical Therapy Section of Kings County Society.—A meeting of the Section of Physical Therapy of the Kings County Medical Society was held in Brooklyn, New York, May 14th, under the presidency of Dr. Jacob Gutman. The program consisted of the following papers: Recent chemical and clinical studies of the mineral waters of the Saratoga Spa, by Dr. Walter S. McClellan, which was discussed by Dr. K. Harpuder; An attempt at rationalization of the influence of the Kenny routines on the treatment of poliomyelitis, by Dr. William Benham Snow, which was discussed by Dr. Mary Daly; Physical therapy in the treatment of athletic injuries, by Dr. S. E. Bilik, which was discussed by Dr. Charles Weinrib.

Cancer Teaching Day.—The Medical Society of the County of Erie, University of Buffalo School of Medicine, the Eighth District Branch of the New York State Medical Society, the New York State Medical Society and the division of cancer control of the state department of health are sponsors for a cancer teaching day to be held in Buffalo on June 18th. The speakers will include Dr. Chevalier L. Jackson, Philadelphia; Dr. George F. Cahill, New York; Dr. Frank E. Adair, New York, and Dr. Thomas E. Jones, Cleveland. At the dinner session Dr. Cornelius P. Rhoads, of New York, will deliver an address on recent studies in the production of cancer by chemical compounds.

Courses for Physical Therapy Technicians.—Columbia University announces that beginning September 1942, a program of professional studies for the training of physical therapy technicians will be offered. This training and instruction will extend over a two-year period and has been organized in compliance with the requirements set down for such programs by the Council on Medical Education and Hospitals, of the American Medical Association. The clinical and laboratory instruction will be given at the Vanderbilt Clinic, Neurological Institute, Presbyterian Hospital, and New York Orthopedic Dispensary and Hospital. Two years or sixty semester hours of college, including courses in physics and biology, shall be required, or graduation from an accredited school of nursing or an accredited school of physical education. A certificate of proficiency in physical therapy will be granted by Columbia University to those completing the course. Further information may be obtained by writing to the Office of the Committee on Physical Therapy, Room 303 B, School of Business, Columbia University, New York.

Wartime Adjustment of the Exceptional Child.—The eighth Institute on the Exceptional Child was held at Langhorne, Pa., on Tuesday, May 26th, under the auspices of the Child Research Clinic of the Woods Schools. The purpose of this institute was to discuss the wartime adjustment of the exceptional child and the topics included social adjustment during early childhood and its failures; educational philosophy for the school for exceptional children; educational practice; social adjustment; vocational training for the exceptional child during the war emergency; military service, and the impact of war on the family. Among the speakers were: Dr. Erich Benjamin, Baltimore, Md.; Dr. Caroline B. Zachry, New York; Dr. Sidney B. Hall, Washington, D. C.; Dr. Emily T. Burr, New York; Dr. Paul V. Lemkau, Washington, D. C., and Dr. James H. S. Bossard, Lansdowne, Pa.

International College of Surgeons.—The United States Assembly of the International College of Surgeons will meet in a four-day session in Denver, Colo., June 15th to 18th, with headquarters at the Shirley-Savoy Hotel. Panel discussions on all aspects of surgery will be held synchronous with the main assembly at the Brown-Palace and Cosmopolitan Hotels. A feature of the Wednesday program will be a military symposium with Colonel Fred C. Wright, commanding officer, Fitzsimons General Hospital, Denver, presiding. Contributors to the symposium are: Commander Joseph Madison Greer, M.S., U.S.N.R., chief of surgery, U. S. Naval Hospital, San Diego, Calif.; Dr. John Amesse, state chairman, Procurement and Assignment Service, Denver; Mr. Harvey T. Sethman, executive secretary, Colorado State Medical Society. On Saturday, July 18th, operative clinics will be held at the University of Colorado School of Medicine and Hospitals, Fitzsimons General Hospital, U. S. Army, Denver General, Children's, Mercy, National Jewish, Presbyterian, St. Anthony's, St. Joseph's, and St. Luke's Hospitals. The scientific exhibits will include subjects allied to general surgery. The entertainment features include a tour of the Denver mountain parks and a golf tournament.

State Medical Association of Texas.—The seventy-sixth annual meeting of the State Medical Association of Texas was held on May 12th, 13th, and 14th, at Houston, with headquarters at the Rice Hotel. Dr. N. D. Buie, of Marlin, delivered the presidential address at the opening meeting on Tuesday morning, May 12th, his subject being the Responsibility and Duties of the President of the State Medical Association of Texas. The program was divided into eight scientific sessions, all of which held meetings at the Rice Hotel, except the Section on Public Health which met at the Texas State Hotel. A combined meeting of all the sections was held on Thursday afternoon with Dr. Buie presiding. The scientific and technical exhibits were interesting and instructive.

Related organizations which met in Houston on Monday, May 11th, included the Texas Railway and Traumatic Surgical Association, Texas State Heart Association, Texas Dermatological Society, and the Texas Neuropsychiatric Association. The program of the Texas State Heart Association included symposia on rheumatic fever and military aspects of cardiovascular functions. On Monday there was a Conference of County and City Health Officers which included a discussion of emergency medical civilian defense.

Personal.—Dr. Max Einhorn, of New York, was presented with the Friedenwald Medal at the annual meeting of the American Gastroenterological Association held in Atlantic City, N. J., on June 8th and 9th. The presentation was made by Dr. William Gerry Morgan, of Washington, D. C.

Dr. K. F. Meyer, professor of bacteriology at the University of California, has been appointed a member of the Medical and Health Advisory Committee of the American Red Cross. Dr. Meyer is director of the Hooper Foundation for Medical Research and consultant to the California State Department of Health.

Dr. H. W. Kostmayer has been appointed acting dean of the School of Medicine of Tulane University of Louisiana, New Orleans, during the absence of Dean Maxwell E. Lapham, who is now on Navy duty.

Dr. Henry E. Sigerist, director of the Institute of the History of Medicine at Johns Hopkins University, has been elected an honorary member of the Society of the History of Medicine at Buenos Aires.

Dr. Jacques P. Gray, of Berkeley, Calif., has been appointed professor of preventive and public health medicine and dean of the Medical College of Virginia, Richmond.

Dr. Hyman I. Goldstein, of Camden, N. J., spoke on liver therapy and vitamin B complex in cirrhosis of the liver and atrophic gastritis, which he illustrated with lantern slides, before the one hundred and seventy-sixth annual meeting of the State Medical Society of New Jersey, Section on Gastroenterology, at Atlantic City, N. J., April 22, 1942. The paper was discussed by Dr. Harold S. Davidson, of Atlantic City.

Dr. Walter B. Cannon, George Higginson professor of physiology at Harvard Medical School since 1906, will retire on September 1st with the title of emeritus professor.

Dr. Jacob Sobel, attending pediatrician at the Hospital for Joint Diseases and Beth David Hospital, and director of pediatrics at Gouverneur Hospital, won the first prize of $250 in the national essay contest sponsored by Town Hall in connection with its radio forum, America's Town Meeting of the Air. His subject was "What Must We Do to Improve the Health and Well-Being of the American People?"

Public Health Training at Massachusetts Institute of Technology.—In view of the acute need for more trained public health workers, the Department of Public Health at the Massachusetts Institute of Technology is offering an accelerated program of public health training beginning June 8th, according to the *New England Journal of Medicine*. These training courses are organized for public health engineers, health educators, and public health laboratorians, as well as for administrators. Special summer courses are also being offered.

Stricter Control of Optometry.—On March 20th, the New York State Board of Regents adopted more rigid regulations for the practice of optometry, according to an item in the *Journal of the Medical Society of the County of New York*. The new rules strengthen the provisions on fraud and deceit, nonprofessional conduct and misrepresentation so as to include advertising making any reference to price of examinations, frames, lenses or any other optometric service. They also condemn the offering of free examinations, discounts or other services.

Book Reviews

Pharmacology

A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology. By TORALD SOLLMANN, M.D., professor of pharmacology and materia medica in the School of Medicine of Western Reserve University, Cleveland. Sixth edition, entirely reset. Philadelphia and London: W. B. Saunders Company, 1942. Pp. 1298. Price $8.75.

This standard manual of pharmacology gives a comprehensive cross-section of current conceptions of drug action, good and bad, in medicine and surgery. In addition to the classical contributions that remain fundamental in pharmacology, there are special chapters devoted to sulfonamides, antimalarial agents, anesthetics, anticonvulsants, hormones and vitamins in which so much progress has recently been made. Despite this heterogeneous array of material the text presents a connected story of facts and explanations that should be familiar to every student and practitioner. Unique facts of value to research workers are also included, and items of a similar type of special interest to physicians looking into the mechanism of pharmacological action. This manual thus serves as a reference book—as well as a text. It gives the feeling that one can form an individual judgment of the experimental and clinical citations about all approved drugs used in everyday practice. The book is teeming with worth-while information on every aspect of dynamic medicine.

Heart Failure

Heart Failure. By ARTHUR M. FISHBERG, M.D., associate in medicine, Mount Sinai Hospital, New York City. Second edition, thoroughly revised. Illustrated with twenty-five engravings. Philadelphia: Lea and Febiger, 1940. Pp. 829. $8.50.

It is a somewhat sad commentary on medical progress to find in an exhaustive work of this kind so much data and so much space given to the *post hoc* or pathological facts in heart disease and so little that is cheering relative to prevention and early, effectual treatment. The etiology of rheumatic fever seems not as yet to be fully known to "heart men", although the bacterial (streptococcic) evidences seem overwhelming. This author does not find that "pulling teeth", performing sinus operations or doing tonsillectomies have much if any bearing on improving the patient's condition; in fact, he says that they often seem to worsen the symptoms. Quite so. Any surgery performed during an active infection is quite likely to break down "the phagocytic wall" and "spread" bacteria and their end-products to every tissue and organ. Years ago, when pelvic surgeons removed the uterus and appendages during violent infections, *exitus letalis* was hastened through "general septicemia". The horse was stolen, the stable was locked and the building burned down. Germs which cannot be killed or neutralized in the blood stream will create havoc everywhere, and if they do not bring death immediately, they leave behind the enormous structural changes which are so intensively studied and interpreted by "specialists."

There must always be an active focus of infection somewhere in the body before local or general "circulatory failure" can take place. Generally speaking, the focus lies somewhere in the respiratory tract as evidenced by an acute purulent sinusitis, simple "sore throat" (which is no acceptable diagnosis) or a "strep. throat" which is too often a guess and not a result of microscopic diagnosis by means of throat cultures and an experienced bacteriologist.

As to treatment, the salicylates are traditional, but by common consent, do not greatly influence the course of rheumatic fever. Rest in bed, sunlight, and good nursing for many weeks may reduce the number of cardiac cripples. Not enough work has yet been done with the sulfa remedies as applied to known bacterial causes of acute "heart disease" to set down the results. They ought to prove very useful.

Social Work in Psychiatry

Psychiatry Social Work. By LOIS MEREDITH FRENCH, director of the Study of Trends, American Association of Psychiatric Social Workers. New York: The Commonwealth Fund; London: Humphrey Milford, Oxford University Press, 1940. Pp. 344. Price $2.25.

This study, which was sponsored by the American Association of Psychiatric Social Workers, deals with the origin of the service, the different lines of development, the rapid expansion of psychiatric social work into many areas, and indicates directions in which future progress should take place. A statistical analysis and interpretation of the field is given, and a special chapter treats of the psychiatric social work in hospitals and clinics. In an introduction to the book, George S. Stevenson, medical director of the National Committee for Mental Hygiene, points out that almost every psychiatrist can recall patients whose difficulties might have been better understood and relieved if the circumstances of their daily lives at home and at work could have been studied. The cooperation of physician and social worker is particularly important in this part of social medicine. The book therefore will be of value to physicians and psychiatrists as well as to social workers.

Food and Dietetics

Hutchison's Food and the Principles of Dietetics. Revised by V. H. MOTTRAM, M.A. (Cant.), professor of physiology at King's College of Household and Social Science, University of London, and GEORGE GRAHAM, M.D. (Cant.), F.R.C.P. (London), physician to St. Bartholomew's Hospital. Ninth edition. Baltimore: The Williams & Wilkins Company, 1940. Pp. 648. Price $6.75.

This major work on dietetics was published in Great Britain. It reflects the foresight of the first author who foresaw the rôle of nutrition in maintaining well-being by diet and alleviating metabolic disorders by a balanced regimen. Today this principle has permeated all branches of medicine and even all aspects of warfare. The work as a whole is expressed in lucid language without the exuberance of neophytes in dietetics. Recent developments of the subject have so altered the proportions of early editions that much rearrangement has been effected in the present volume. It remains essentially a work of normal nutrition, for the chapter on feeding in disease comprises only fifteen percent of the total content of the book. After a brief introduction on the history of dietetics there is a delightful presentation of the diet in normal life, an interesting discussion on the nature of various foodstuffs, the principles involved in the feeding of infants and children and some recent methods of management of disease by diet. The weakest link in this well-balanced sequence is the chapter on infant nutrition, sound academically but inadequate clinically.

Medicoliterary Notes

An important spring publication of G. P. Putnam's Sons is a new manual entitled *Essentials of Nursing,* by Helen Young, Director of Nursing at Columbia-Presbyterian Medical Center, and a group of her associates. The editor is Eleanor Lee, a graduate of the School of Nursing of the Presbyterian Hospital. The book is addressed both to the nurse of today and the nurse of tomorrow. Its scope covers basic nursing principles for the beginner, and the specialized nursing care in diagnostic and therapeutic procedures together with the rôle of the nurse in emergencies. The volume is profusely illustrated with line drawings by Helen B. Pristop, and many valuable tables and diagrams accompany the text.

* * *

The Kiwanis Magazine for May has for its leading article a discussion of "The War and Nerves" by Dr. Theophile Raphael and Dorothy Simon Engel. Dr. Raphael is a member of the Military Mobilization Committee of the American Psychiatric Association; his co-author is executive secretary of the Ann Arbor Family and Chlidren's Service. As to the psychological attitude of the average person in war times the article states: "War dangers are not so menacing when the individual can feel that his efforts can contribute to turn the tide and are part of such a plan. . . . Each person should have a specific duty to perform which is necessary and for which he is definitely responsible, a felt part in the total effort. Group unity can be reinforced if each individual feels concerned about the welfare of others. Working together and playing together in groups increase one's feeling of securely belonging somewhere. Never was the idea of fraternal service so important as it is now."

* * *

In its supplement to the catalogue of books for nurses the Macmillan Company lists a number of new publications of interest to the medical profession. Among these are *Who Is My Patient?* by Russell L. Dicks; *Microbiology and Pathology,* by Rice and McCoy; *Rabies,* by Dr. Leslie T. Webster of the Rockefeller Institute for Medical Research; *Diseases and Injuries of the Larynx,* a second edition of *The Larynx and Its Diseases,* by Chevalier Jackson; *Nutrition and Diet,* by Fairfax T. Proudfit; *From Witchcraft to Chemotherapy,* by Sir Walter Langdon-Brown, the Linacre Lectures for 1941; *Your Personality: Introvert or Extravert?* by Virginia Case, a former pupil of Jung of Zurich, and *The Public Health Nurse in Action,* by Marguerite Wales, with a foreword by Lillian Wald. The Macmillan Company, upon learning from the Victory Book Compaign Committee's announcement that *Gone with the Wind,* by Margaret Mitchell is the favorite novel of America's men in service, has sent copies of the book to two hundred camp libraries throughout the United States.

* * *

Time and the Physician is the autobiography of one of America's most famous doctors, Lewellys F. Barker, who became Sir William Osler's successor at Johns Hopkins. Dr. Barker, Canadian by birth, had always cherished a great admiration for the work at Johns Hopkins and also for Dr. Osler, one of the promoters of that work. In order to be near the institution and Dr. Osler, Dr. Barker accepted, since there was no vacancy in the hospital, the position of summer resident physician in a rural hospital for children nearby. Thus he was enabled to attend Dr. Osler's ward rounds and watch the great man's work. Later a vacancy occurred in the Johns Hopkins staff, and the place was offered to Barker. Here he remained, in one position or another, for the remainder of his life.

Critique

British and German Nutrition

On May 30, 1941, the British Minister of Food, Lord Woolton, called upon Americans to decrease their consumption of milk, cream, sugar, cheese, canned salmon, and canned meat so as to send Britain the "surplus". He remarked that two million British children lacked milk. Millions of American children also lack it. He said that the British diet, while adequate to maintain health, was "unhappy and dull".

If it were necessary for us to meet British needs by curtailing our own consumption (which it is not) we should have to set up a weekly milkless day, a cheeseless week per month, and to do without canned salmon one day every two weeks and without canned meat one day a month. But we now have an Agricultural Adjustment Administration which can effect either a decrease or an increase in specific crops as required. It works with farmers in democratic cooperation. How much do the British need and can we supply it?

The 1941 food position of Great Britain was roughly that of Germany in 1916. That gives less than two years to the breaking point on the assumption that the shipping situation would worsen. The British food policy has too long been based on beef and wheat; the effort now is to base it on milk cows, fresh vegetables, and root crops primarily. But, in contrast to Germany, Britain has been criminally negligent in nutrition matters so far, as enlightened British sources freely admit.

Fat stock interests have dominated the National Farmers' Union which has in turn dominated the Ministry of Agriculture which, in turn, too often works at cross purposes with the Ministry of Food even yet. The former ministry is a producer not a consumer agency. As recently as last autumn it fixed food prices too high for consumers, merely in order to benefit producers, and in spite of protests from the Ministry of Food.

What is even more surprising it appears that the noted British nutrition expert, J. C. Drummond, was left for a long time in a back room studying the possible gas contamination of foods, a military not a nutritional problem, and Sir John Orr was only belatedly called to service by Sir William Bragg's Scientific Advisory Committee on Food. As Minister of Food Lord Woolton's policy has been based upon distributing foods that happen to be plentiful, not on the nutritional needs of the people as scientifically ascertained.

For instance, he put on an eat-more-oatmeal campaign when this cereal was plentiful, though people in many British localities are unused to eating it and their shopkeepers had no supplies and could procure none in a hurry. Differential rationing is still in its in-

fancy whereas Germany gives each individual the kind of ration he needs based on age, sex, occupational status, and so on. Communal feeding has not been extended in Britain as it could and should be, food bootlegging exists, and there is a black market where racketeers cash in heavily.

It is reported that most of the food convoy sent to feed the unfortunate inhabitants of Sheffield after a blitz was lost between the dock town and the city. It was simply stolen and sold by food bootleggers in food speakeasies according to the London *New Statesman and Nation* of April 26, 1941. The British Food Ministry will soon buy up fruits and vegetables and take control of canning, fortunately.

Germany prepared for war with farsighted scientific care. German agriculture was reorganized seven or eight years ago and the entire German food economy was switched in 1935. The German people were then inured to the monotony and stringency of wartime feeding and the agricultural policy adopted made Germany the most nearly self-sufficient country in Europe in food essentials. The German Jew, Haber, later baninshed, had by his method of nitrogen fixation given the Nazis ample fertilizers. The German government saw to it that sufficient milk, bread, and vegetables existed for all. The Nazis can spare calories to the rest of Europe.

As the *New Statesman and Nation* said: "It is criminal folly to imagine that Germany will collapse through food blockade this time. The Nazi food economy has been devised, like the German military tactics, to turn to account lessons made from mistakes last time." Despite all wishful reports the condition of Italy was even better than that of Germany in 1941 as far as food was concerned and she had much to spare her Axis partner (unless conqueror is the right word.)

* * *

Problems of Druggists: In the *American Druggist* for November 1928 Homer C. Wallace expounded some of the druggist's trials in a very lively style. He said that each face dope, when it got a name, tried then to follow up with an entire exclusive beauty line—cosmetics of all sorts—to sell on the name and advertising of the one that made good. Customers were told to ask for members of the line and druggists had to stock up whether they wanted to or not. Yet they often lost trade in the process because many customers, supposing they had to buy the entire line to become beautiful, simply quit and bought none. A noted straw-hat dye was then asking on its carton that the buyer use its maker's fabric dyes only; the manufacturer of a boiling dye had just come out with a new dye soap; every manufacturer demanded that the dealer stock all new lines on the strength of the old. There were dozens of lines of flashlights in multiple styles, a half dozen cameras of varied hues intended to match the attire, a fast-selling chest ointment that insisted on purchasers using the same brand cold cream, shaving creams warning men they could get good results only by using the same brand toilet talc and lotion, one box of mints offered free with every ten boxes of assorted mints purchased, a toilet-goods maker offering a rouge and lipstick along with its standby face powder, rouges with dozens of inconceivable and incredible colors, two advertised brands of toothbrushes which had grown to a show-case full of different kinds—all the brushes being "scientifically designed" and widely different, and a sixty percent cut in the line advisable. A cold cream company had just put out a "skin freshener" and a tissue for removing cold cream from the face, while coyly remarking that its rouge was incomparable. Manufacturers listed all sizes, kinds, and prices in compacts; a twenty-five cent soap maker offered eight other items of which there was really no need; a corn and bunion maker had thought up additional plasters of fantastic kinds; new ginger ales came and went; boxes always told customers to ask for "hospital size" containers; the druggist had to stock all sorts of compounds of different brands to please different physician's idiosyncrasies, and sold few of any of them; national advertising demanded that customers specify the goods and the size of the container, regardless of the loss druggists suffered in stocking the items; some stores carried sixty brands of dentifrice of which only a dozen sold well enough to merit stocking, and ten to fifteen brands of milk of magnesia, whereas only two were well-known enough to sell.

Well, watch things from now on. Read up what happened to the cosmetic and drug brands in Great Britain. Consider the recent limitation on vitamin A at five thousand units per dose. Consider reduction of the sizes of cans to hold tomato juice from thirty to four. Just you watch and wait. You'll see great changes. Unfortunately human beings are so constituted that they can only be induced to adopt rational methods when mass destruction of human life and property is encouraged throughout the world. This is a madness so expensive that the strictest economies must be practiced at home in order to destroy lives and property abroad, so science and rationalization step into the market. But how long will such common sense last after the war is done?

* * *

How Well do Americans Feed

(Continued from page 295)

In the *Journal of the American Medical Association* for December 20, 1941, several investigators reported on the physical fitness of children from different economic levels in Chicago, using youngsters recorded in the Elizabeth McCormick Memorial Fund class enrollments to the number of 6,438, about evenly divided as to sex, aged between two and eighteen. The majority of the family incomes ranged from $2,000 to $4,000 a year; only two percent hit as high as $10,000. Most of these children were in need of medical attention regardless of the family income level; sixty percent required it all-told, while twenty-two percent of those on relief and only sixteen percent of those from good-income families were underweight. The diets were evaluated by Bureau of Home Economics standards (*Farmers Bulletin* 1757) and the dietary level was closely associated with income. Diets low in protective foods were eaten by ten percent of the children from good-income families, by thirty-two percent of those from marginal-income families, and by sixty-four percent of those from relief families. Health education was obviously needed even among the high-income classes. Fifty-eight percent of the kids needed dental care, thirty-nine percent all-told were low in protective foods and, as usual, conditions were worse among Negroes than among whites at every level. THE CRITIC

MEDICAL RECORD
A National Review of Medicine and Surgery, Established 1843
FORMERLY KNOWN AS THE MEDICAL JOURNAL AND RECORD
PUBLISHED MONTHLY BY
THE MEDICAL JOURNAL AND RECORD PUB. CO., INC.
Office of Publication: 210 Orchard Street, East Rutherford, N. J.
Editorial and Executive Offices: 70 Orange Street, Bloomfield, N. J.

GREGORY STRAGNELL, M.D. - - - - - *Editor*
A. M. MARLATT - - - - - *Assistant Editor*
N. F. HANF - - - - - - *Business Manager*
C. A. MCHALE - - - *Advertising Manager*

Subscription Price: Under Domestic Postage, $4; Foreign Postage, $4.75; Single Copies, 25 cents.

Remittance should be made by New York Exchange, post office, or express money order, payable to The Medical Journal and Record Publishing Company, Inc., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

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JUNE 1942

Medicolegal Notes

Connection Between Myocarditis, Accident and Pneumonia

In New York Life Ins. Co. vs. Greber, Arizona Supreme Court, 100 P. 2d 987, the only question was whether the death of the insured under the life policy sued upon "resulted directly and independently of all other causes from bodily injury effected solely through external, violent and accidental cause," under the double indemnity clause of the policy. Such provisions, the court pointed out, are quite common of late years in life policies, and much litigation has arisen as to their proper interpretation. In this case, however, counsel for both parties agreed as to the law, their difference being in its application to the evidence.

The court stated the applicable law as being that (a) if the accident causes a diseased condition which together with the accident, results in insured's death or (b) disease from which insured was suffering at the time of the accident had no causal connection with his death resulting from the accident, the accident would be held the sole cause of death. But (c) when disease existed at the time of the accident and cooperated with the accident in causing the death, the accident will not be held the sole cause of death within the double indemnity clause.

The answer to this question is obviously one that can be given only by expert medical witnesses. In this case three physicians testified. The admitted facts were that, while insured was still suffering from bronchial asthma for which he was receiving from the defendant complete disability benefits and from myocarditis which was followed by some edema in his legs and feet, he became involved in an automobile collision and was found thereafter to be suffering from shock and marked contusions to his right chest wall, though no bones were fractured. After fifteen days in a hospital, he was taken to his home for further treatment. Several weeks later he was returned to the hospital where he was found to be suffering from pneumonia from which he died three days later.

The vital question was whether the pneumonia was induced solely by the accident or whether it was caused by the accident with the myocarditis and bronchial asthma as contributing causes. In one case the plaintiff could recover in the other she could not. The court did not attempt to summarize the medical evidence but held as a matter of law that it did not sustain the burden of proof imposed upon the plaintiff to establish affirmatively by a preponderance of the evidence that the death of the insured was due solely to the accident and therefore reversed judgment for the plaintiff and remanded the case for a new trial.

Heart Strain Held Compensable

An employee who suffers an accidental strain of the heart by doing work which calls for unusual effort or exercise may recover compensation under the New Jersey Workmen's Compensation Act. Randolph vs. Woman's Club of Bloomfield, 127 N. J. L. 49 21 A. 2d 324, in which it was held that a woman forty-nine years old, employed as a resident caretaker by a club, suffered a compensable accident affecting her heart as the result of moving a piano in the course of her duties, causing partial permanent disability from accident.

Defendant's Rights in Malpractice Action

The New York Supreme Court, Kings County, Perlman vs. Perlman, 33 N.Y.S. 2d 29, refused to consolidate an action for malpractice before it with an action by the physician in the Municipal Court for his fee for the services which plaintiff in this action alleged were negligently performed. The court considered that the malpractice action, which is an unusual action, and unlike the ordinary accident or contract actions, should be separately treated. If the actions were consolidated, the physician would be required to take the witness stand to prove his claim for services or abandon that claim, and so subjected to cross-examination by plaintiff in this action, who would thus have the benefit, to whatever degree it would help her, of the physician's testimony. On this claim of malpractice, it was defendant's right to remain off the witness stand when putting in his defense, or to put in no defense. In whether that would be helpful or hurtful to his cause, the court was not interested. It was, however, a right which would be lost if consolidation forced him to testify.